

...Upfront

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Eating in the 20th Century

Americans have enjoyed creating new foods and dishes, but eating them has been our real pleasure. What we eat and how we eat it reflects our culture and our lives. America's food choices and eating habits changed as dramatically during the 20th century as hair and clothing styles, modes of transportation, and the pace of life. The same 100 years that rocketed us from the age of steam power to the era of the Internet also took us from the wood stove to the microwave, from Sunday dinners to food delivered to our doorsteps. Each small change reflected something about the sweeping political, social, and economic upheavals and stunning technical achievements that made the 20th century unique. It has been quite a journey.

To mark the new Millennium, this issue of *FoodReview* examines the past 100 years of eating in America. It makes for fascinating, informative reading. At the beginning of the 20th century, home cooking—largely the work of women—was done on wood stoves; indoor running water was a novelty. Then, the modern kitchen appliance was the ice box, automobiles were scarce, and 40 percent of the population lived on farms. Most food was fresh, reflecting our agricultural roots, with a heavy emphasis on lard, butter, fresh meats, sugar, potatoes, and seasonable vegetables.

By the middle of the 20th century, more than a million American homes had television sets, a new medium that came to have a profound effect on our world views, our family life, and our eating habits. TV dinners were popular. People were becoming more conscious of nutrition even as they snacked more. Agricultural advances provided abundant food at ever lower prices. Processed foods rapidly proliferated as home cooking and canning fell by the wayside. Urbanization continued, and farms became home to only 15 percent of the population. American life quickened, and as more families saw both parents working, fast food restaurants began to take off.

This remarkable century closes with a booming economy and people busier than ever. Women are vital to our labor force and more and more men venture into the kitchen. Dining out is more popular than ever, natural foods are in strong demand, and Americans are eating more fruit, vegetables, and poultry. Immigrants from Latin America, Asia, and other regions further shape our food culture and dietary habits. Despite 100 years of change, however, food has not lost the central role it plays in our lives.

The 21st century promises to be just as exciting, eventful, and dramatic as the last. Technology will march on, society will change, and what we eat and where we eat will become even more varied. But I am convinced that one thing will remain the same: For bringing people together, for celebrating the most important moments in our lives—nothing pleases us, delights us, and unites us like food.



Dan Glickman
Secretary of Agriculture

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American Cuisine in the 20th Century

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Throughout the 20th century, Americans drastically changed their diets. Gone now are the straightforward meat and potatoes of the early 1900's. The types of foods Americans ate evolved slowly but consistently from a stereotypical "American" plate fixed by "mom" to a mix of cuisines and preparation habits.

Meat Dominated Americans' Plates

In 1900, Americans wanted. . . meat, meat, meat. And potatoes. And cake and pie. Not necessarily at all times and in all places, but mostly these foods described American cuisine in the 19th century and the early years of the 20th. Whether huge Porterhouse steaks at Delmonicos of New York City, "hog and hominy" on Southern farms, crown rack of lamb on New England tables, fatback in sharecropper shacks, or roast beef for Sunday dinner in the Midwest, no meal was such without meat of some kind at its center.

But always, in all sections of the Nation, beef was recognized as the king. And whether beef, or lamb, or fowl, or pork, it was most often

accompanied by roasted, mashed, riced, baked, or fried potatoes. Sauces and condiments might be on the side, and other vegetables and fruits might take up a niche on the table, but meat and potatoes were the basics along with heavy sweets, especially cakes or mince, cherry, apple, or berry pies, with large dollops of whipped cream, if affordable.

Even breakfasts would be unrecognizable to Americans of the late 20th century. The spread might include steaks, roasts, and chops, along with heaps of oysters, grilled fish, fried potatoes, and probably some scrambled eggs, with biscuits and breads, washed down with numerous cups of coffee.

No wonder, then, that heavily padded figures were the fashion for both sexes. Working men tended to be stocky and their wives matronly, except in the pellagra-ridden South. The financier J.P. Morgan and President Grover Cleveland set the standard for both the upper and middle classes, with their huge bellies accentuated by fashionable vests and heavy gold watch chains. The *femme fatale* of the 1890's was the beautiful 200-pound actress Lillian Russell, with her *zofitig* bosom and hips, and wasp-waist. Wealthy Americans and their "wannabes" believed in conspicuous consumption even before the pioneer sociologist Thorstein Veblen verbalized it.

Moreover, most believed that a weighty figure demonstrated good health. A popular self-help book of the day was *How to Be Plump*. The laboring class followed the example of the upper and upper middle classes as much as they could with fatty meats and flagons of beer.

By 1900, Americans of all classes had access to better quality beef and other foods, thanks to scientific and technological advancements in food production, processing, and transportation. Huge corporations efficiently processed and packaged all manner of foods. As railroads pushed their lines out onto the Great Plains, easy access to abundant and hardy new strains of wheat brought cheaper bread and other baked goods. Refrigerator cars swiftly delivered better quality beef and other meats, fattened in the Midwest and butchered in Chicago, to stores and restaurants around the Nation. The Meat Inspection Act of 1906 and the Pure Food and Drug Act, instigated by Upton Sinclair's novel, *The Jungle*, and pushed by President Theodore Roosevelt, gave Americans greater confidence in the quality of their food.

In other areas of processing, the National Biscuit Company gained a near monopoly in soda crackers through neat packaging and heavy advertising of the brand name "Uneeda Biscuit." Henry J. Heinz

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skillfully combined new advances in canning with sprightly advertising to make famous not just his pickles but his other "57 Brands," a figure he picked out of thin air. In 1898, his rival, John T. Torrance, perfected condensed soups under the brand name Campbells. Heinz, Campbells, and Franco-American soon were jockeying for space on grocers' shelves as production of canned goods advanced exponentially.

Birth of "Nutrition" Puts Meat Under Fire

Not all social observers were enamored of America's love affair with meat. A new field, nutrition, appeared in New England. A group of Bostonians, referred to both respectfully and derisively as Brahmins, began to worry about the diets of working people and encouraged nutritionists to investigate the necessary components of a healthy diet for a good day's work. These new nutritionists believed that the laboring class spent too much of their income for expensive cuts of meat when cheaper cuts or other protein sources could be tastily prepared and were as nourishing. And, as a massive new wave of immigrants from southern and eastern Europe began arriving in America in the early 1900's, the new nutritionists rejected their alien tastes for such unheard-of dishes as pastrami, pierogi, borscht, or goulash.

These nutritionists spent much time and effort in a twofold uphill crusade. On one front, they fought to encourage immigrants to adopt "American" foods and ways of eating, but to little effect. On the other, they battled diligently to get American-born workers to eat cheaper cuts of meat, rather than the expensive cuts the wealthy were enjoying, and to eat more beans and other legumes. American-born workers vehemently resented efforts to take away the more expensive meat,

which they saw as their one great privilege in life, and immigrants simply ignored the nutritionists' admonitions.

In the early 1900's, these new nutritionists measured only the simplest things: protein, fat, carbohydrates, and water. They saw little value in fresh fruits and were actively opposed to greens, which they asserted required more bodily energy to digest than they provided. To the good, however, they advocated smaller, simpler meals, and they built the first steps by which more scientific nutritionists climbed.

A number of young scientists in the U.S. Department of Agriculture (USDA), especially in the Office of Experiment Stations, headed by W.O. Atwater, began to delve more deeply into the composition of foods. Colleges and high schools began to study what came to be called "home economics." More accurate measures of the value of various food components, particularly of fats, carbohydrates, and proteins, followed.

Food scientists had long believed that a high percentage of protein was necessary in diets. A challenge to this belief was posed by a pair of food faddists with popular followings, Horace Fletcher and Dr. John



Early in the 20th century, potatoes were a staple of the American diet.

Credit: USDA

Harvey Kellogg. The latter was a vegetarian and the former a believer in chewing every mouthful of food a hundred times. Both men agreed that Americans consumed much more protein than was healthy and that one could eat less, feel better, and live longer.

At first, USDA scientists disagreed with proposals to reduce protein in the diet, but by 1910, Russell Chittenden, director of Yale's Sheffield School of Science, recognized both the economic and health values of protein-reduced diets. This finding proved a slow sell to Americans but gradually took hold, as the slender "Gibson Girl" replaced Lillian Russell and as hemlines rose. The Nation's entry into World War I encouraged lighter meals. Then the ultra-thin figure of the 1920's "flapper" became popular.

Dr. Alfred C. True, longtime head of USDA's Office of Experiment Stations, used the wartime emergency and especially the appalling bad health of many draftees to make a massive survey of the Nation's eating habits, giving scientists a vast amount of data to work from. The War Department familiarized American soldiers from immigrant and regional backgrounds with simple, healthy meals. Interestingly enough, the war began the process of making Americans willing to try a "foreign" cuisine (albeit in its simplest form): Italian—spaghetti with tomato sauce. Italy, after all, was a major ally in the war.

Scientists Promote Vitamins and Minerals

Scientists in the 19th century had found that certain bacteria could cause illness; researchers early in this century began to recognize that lack of certain things could also harm the body. In 1911, Casimir Funk discovered a water-soluble nutrient later called vitamin B1 (a year later he coined the term "vita-

mine") that, in 1916, was shown to prevent the vitamin deficiency disease beriberi. In 1913, Elmer McCollum and Marguerite Davis found a fat-soluble nutrient that was later christened vitamin A. These discoveries rapidly led to finding many other vitamins as well as minerals that, if lacking in the diet, caused a variety of health problems.

Most Americans were not quite sure what vitamins were, but were convinced that they could lead to the golden gate of better health, sexual vitality, and longer life. From Kellogg's and Post's cereal boxes to CocoaMalt, Ovaltine, and a whole host of "tonics," Americans went vitamin crazy. At first manufacturers were not able to provide vitamins in pill or liquid form, so Americans avidly pursued vitamin-rich foods.

The near-craze for vitamins had another cause. Since the turn of the century, financiers such as J.P. Morgan and his ilk had assembled food conglomerates such as General Foods (Post Toasties, Jell-O), Standard Brands (Chase and Sanborn, Royal Baking Powder), General Mills (home of "Betty Crocker"), and Sunkist. By 1920, food processing had become the largest manufacturing industry in the Nation, surpassing iron and steel, automobiles, and textiles in terms of earnings. Competition for shelf space was fierce in the small family groceries that preceded supermarkets. A strong selling point for individual products became their vitamin content, ballyhooed on the radio and in print.

The circulation of women's magazines, with their increasing panoply of recipes that often used brand names, increased greatly during the 1920's. Even marginal food items such as Fleischmann's yeast, no longer in heavy demand by home bakers, was touted for its vitamins and minerals, curing pimples, boils, "fallen stomach," and other disasters. Thousands of pimply teenagers

and others chewed the slimy stuff three times a day until the Food and Drug Administration stepped in to halt the more outrageous assertions. Parents, not wanting their children to grow up "vitamin-deficient," heeded the claims of manufacturers. The author, after a long illness, had the favor of ingesting one of the abominations of the period, chocolate-flavored cod liver oil. Milk consumption, which had been declining, rose again after its preventative and curative powers were discovered.

Although scientists knew by 1921 that vitamins were necessary to good vision and good health in general, exactly what they did or what quantity was necessary remained an enigma. The negative effects of increased processing of food, such as loss of vitamins and minerals, were not mentioned by advertisers. And when such leading nutritionists as Elmer McCollum of Johns Hopkins and Lafayette Mendel of Yale appeared on a Betty Crocker "radio special" in 1934 to defend the nutritional value of white bread, critics charged that the food industry had co-opted the educational and scientific establishments.

Menus Become More "Americanized"

The cost of most foods declined during the 1920's. A contemporary study of upper middle class professionals in the San Francisco Bay area showed that they spent about 16 percent of income on food. A 1924 Bureau of Labor Statistics study indicated that the working class spent about 38 percent of income for food, which was still much less than earlier generations. Studies showed that workers averaged 2 pounds more of food per day in 1928 than in 1914 and ate more refined sugar, bread, and starch products, leading to obesity and health problems.

One of the aims of old-line nutritionists, to get immigrants to adopt

"American food," was advanced, especially after passage of the Immigration Act of 1924. As immigration was practically closed for many years, the connection to the foods of the "old country" became more and more tenuous. Home economics teachers, school lunch planners, and advertisers hammered away at second- and third-generation immigrants to "Americanize" their diets. For most, dietary assimilation became a mark of pride.

By the 1920's and 1930's the outlines of what became American-standard meals were common. The breakfasts that in earlier years were heavy on meats and breads became citrus fruit, dry cereal and milk, or eggs and toast. Lunches were light: sandwich, salad, soup. Dinners changed the least, but portions became smaller: roast or broiled meat, potatoes, vegetables, and dessert, with the latter often omitted. A special dinner with four guests might be enlarged to consist of shrimp cocktail, vegetable soup, roast beef with Yorkshire pudding, roast potatoes, stuffed tomatoes, and a dessert of peaches.

Mixed dishes and casseroles, once frowned upon as indigestible, became common although sometimes pretty bad. One shepherd's pie recipe called for meat, potatoes, and vegetables—with a marshmallow crust. A "one-dish salad" mixed Jell-O, fruit, and bottled mayonnaise. For times when the family cook had a full day, newspapers and magazines printed "emergency meals" that often called for canned mushroom or tomato soup. A real emergency food was tomato soup made of one cup of light cream and three tablespoons of catsup.

Isolated regional groups remained outside the norm, however, while the rest of the Nation progressed. The diet of the several million White and Black Southern sharecroppers and tenants during the first half of the 20th century consisted of the "three M's": meat (salt pork), corn

meal, and molasses. In the broad band of Appalachia, the menu often had considerable fresh fruit and vegetables in the summer but a grim combination of fat and flour in the winter.

Depression, War Brought Temporary Hiatus to Americans' Diets

The Great Depression of the 1930's affected classes differently. At its worst, in 1933, one-fourth to one-third of American workers were unemployed. Relief networks, which were sketchy or nonexistent to begin with, were stretched to the breaking point. Parents went hungry to feed their children. On the other hand, as historians often do not point out, those of the middle class who remained employed suffered little and, in some cases, fared better because of the decline in prices for food and many other goods due to decreased national income. Canners, for example, had to cut costs drastically. Surprisingly, meat consumption per capita rose during the Depression decade, though consumption for the decade was below the average for the 1920's. This may have resulted partly from distribution of relief goods, including canned meat, and hamburger sales as low as 5 cents a pound. Moreover, despite the increase of refrigerated transportation, Americans were eating 50 percent more canned and dried fruits and vegetables in 1940 than in 1930, almost as much as fresh produce.

World War II saw the gradual development of a food rationing program. Soon after Pearl Harbor (December 7, 1941), rumors spread of a shortage of sugar, bringing a wave of panic buying. The result was the issuance of ration books in May 1942. Items were gradually added to the list, generally with a prior announcement—which, of course, brought runs on the product

named. Rumors of a coffee shortage created one due to hoarding, which brought on 6 months of rationing. Americans resented rationing and often believed that it was unnecessary. Critics pointed to the farm surpluses of the 1930's and asked how conditions had changed so rapidly.

On the other hand, when the Government called upon citizens to cultivate vegetable "victory gardens," the response was overwhelmingly positive. By fall 1943, some 40 percent of the Nation's vegetables were grown at home. Unfortunately, because of lack of experience, many attempts to can the produce ended in exploded jars, spoilage, and even poisoning.

The Second World War brought almost full employment, and formerly unemployed workers could afford to eat better quality foods. War work brought a measured flight of both Blacks and Whites from Southern sharecropping into defense work and better food.

By the end of the war in 1945, a very large percentage of age-eligible males were in the armed forces. Physicians were appalled at the physical conditions of a majority of inductees. Whatever else service in uniform may have provided, it brought substantial and healthy food in large portions—albeit with a scoop of ice cream often slapped on top of potatoes in the mess tray. The average civilian ate 125 pounds of meat in 1942; the average soldier ate 360. Boys came back men—in bulk at least. The war years also witnessed the beginnings of the school lunch programs, which were a welcome boost to the diets of poor children.

Post-War Prosperity Brings Food Efficiencies, Scares

The end of the war brought years of prosperity instead of the depression that many had feared. Ex-servicemen enjoyed higher education and, thus, higher incomes as a result

of the G.I. Bill. They bought houses at Government-guaranteed low mortgage rates. They married and produced the "Baby Boom" generation. They were a generation of generous eaters, as their waistlines demonstrated.

Women, who had made up an increasing percentage of the work force during the war, were actively encouraged to stay home. Newspapers, magazines, and rapidly increasing television portrayed the happy home as one where mom wore a spick and span frilly apron—never soiled—seldom left the house, and produced good American dishes enjoyed by all.

Statistics revealed this as a myth. Even as early as the self-satisfied 1950's, women returned to work. The number of working wives increased by 50 percent during the decade, and the percentage of working women with children at home increased even more. Food could not be complex in homes where both partners worked. Frozen foods, which had first been perfected in 1929 and ballyhooed by Clarence Birdseye, became almost indispensable. Clarke Swanson felicitously named frozen meals, which included a meat, a starch, and a vegetable, "TV Dinners," and made millions.

A result of the rapid expansion of processing by industry was an increase in synthetic chemical additives, including some 400 new ones during the 1950's alone. A new breed of chicken, from the University of Delaware in 1949, paired with injections of vitamins, antibiotics, and growth hormones, allowed for the mass production of birds. While almost everyone agreed that the new chickens' taste was inferior to that of their sometimes scrawny, free-range predecessors, most agreed that less taste was the price for a more economical product. Consumers also wanted convenient chicken. At first, only whole chickens were available at the store,

then came separate thighs, breasts, and so on, and finally, deboned, skinless breasts. The per-pound price increased with each step, reflecting the added convenience.

As early as 1952, U.S. Representative James Delaney began calling for restrictions on additives that might harm consumers. Finally, in 1958, passage of the Delaney Amendment banned any additive shown to cause cancer in animals. But this was only the beginning of a movement strongly underlined by Rachel Carson's *Silent Spring* in 1962, demonstrating that DDT and other sprays were rapidly destroying bird populations. The food industry was aghast at the implications. After initial hesitations, chemical manufacturers rapidly set their chemists, botanists, agronomists, and ornithologists to seeking solutions. Within a generation, birds such as the Bald Eagle, which had been at the brink of extinction, were again flourishing.

In the same year, after decades of warnings and discussion, the effect of cholesterol on the heart and circulatory system began to be widely discussed. Food processors and the agricultural industry were thrown on the defensive. Land-grant colleges, charged by Congress to educate Americans on agriculture and home economics, demonstrated to farmers how to produce much leaner animals, and dieticians promoted a myriad of heart-friendly food. Consumers became increasingly aware of the nature of the food they consumed. Moreover, the idealized female body changed again, this time from big-bosomed women such as Jane Russell, Marilyn Monroe, and Jayne Mansfield to slender models and actresses such as Suzy Parker and Audrey Hepburn. The combination of suspicion of additives, the fear of cholesterol, and the newly idealized feminine form led 1960s' consumers to demand a sort of "negative" nutrition from the food they consumed, with fewer

additives and calories and less fat, along with the "positives" demanded a few decades earlier, such as vitamins and minerals.

Working Women, Changing Attitudes Affect Diet

Historians hesitate to make "snap judgments"—that is, judgments on anything in the previous 50 years or so. Yet the last few decades of the 20th century entice one to make generalizations at the very least. Two important developments seem to be the employment of women outside the home (see "Cooking Trends Echo Changing Roles of Women," elsewhere in this issue) and the nature of meals and mealtime.

Working Women. At the turn of the 20th century, women working outside the home generally were maids or textile workers from the poorest economic classes; a few were "type-writers" in offices or operated telephone switchboards as "hello girls." Most women, however, were expected to be married and full-time homemakers. But the combination of labor-saving technological advances and the women's liberation movement since the 1950's expanded options for women. By 1982, over half the adult female population worked outside the home, and that percentage continues to increase.

With both partners working, many compromises and adjustments had to be made at home. Even the Crocker family would agree with



The first White Castle opened in Wichita, Kansas, in March 1921.

Credit: © White Castle System, Inc., all rights reserved

this, since Betty has been employed by General Mills for almost 80 years now. The traditional tasks of the housewife, especially cooking and housekeeping, became more shared. In some cases, men discovered that cooking could be an adventure.

Meals Away From Home. Frozen foods became a permanent part of family fare in the 1950's. For a couple of decades thereafter the working couple had two basic alternatives to preparing a meal from scratch. The widespread use of microwaves since 1980 gave the tired couple an incentive to "zap" a couple of frozen dinners after work. The other option was to eat out. In recent years a third choice has been "take out" of prepared meals from a restaurant or the grocery deli section.

Eating out options range from fast food to upscale French and Italian, and, more recently, Thai and Indian. Fast food eateries have been around a lot longer than many Americans realize. Even at the turn of the last century, saloons had their own form of fast food, the "free lunch" counter with its pickles, boiled eggs, and suspect sandwiches, provided for those who bought drinks, usually with a small cover charge.

The more modern fast food concept began shortly after World War I, however, with a barbeque chain in Texas that had "car hops" who literally jumped onto the running boards of incoming cars, jotted down the order, ran to the kitchen and brought it back, lickety-split. Two chains with similar outlook and names, White Castle in 1921 and White Tower in 1926, built white-tiled ultra-clean hamburger shops, often near trolley stops in cities where workers could "buy them by the bag," as the slogan went, at a nickel apiece. By the 1930's, fast food expanded to include drive-ins with sizable parking areas and food orders taken and delivered by girls in uniforms, often including cowboy boots and shorts.

Among the pioneers of fast food were the McDonald brothers, who had a small chain in California since 1940 specializing in the fast delivery of hamburgers. Not long after the end of World War II, they revamped their concept. Rather than having employees deliver orders to the cars, the McDonalds now had the customers come to a counter, place their order, and pick it up from one of the all-male staff.

In 1954, a food product salesman, Ray Kroc, bought out the brothers. Kroc franchised the chain with the Golden Arches. He was a fanatic for cleanliness, and he carried the brothers' ideas even further. To discourage teenagers from hanging out, he banned juke boxes, vending machines, and telephones. He soon outdistanced his older competitors, White Castle and White Tower, whose outlets were in the decaying inner city, by aiming at the bustling new suburbs. He rapidly adapted to the needs of the postwar generation with toys and games for kids. While most fast food outlets did not open until lunch hour, McDonalds' saw a huge potential market for fast food breakfasts and created the Egg McMuffin and its descendants. Other chains followed rapidly, and sales by fast food outlets grew to \$102 billion in 1998.

As Baby Boomers matured and incomes grew in the 1990's, upscale families raised their sights. The hustle and bustle of McDonalds' and other fast food chains lost some attraction. Home cooking made a comeback, but was split more evenly among couples as some men avidly read Julia Child or a host of Chinese cookbooks. And when the affluent family or single person wanted to eat well at home without the chore of cooking, they could find a variety of fully prepared dishes in their local grocery store or more expensive offerings in upscale chains such as Sutton Place Gourmet in the Virginia and Maryland suburbs of Washington, DC.

Those with more moderate incomes found an increasing diversity of choices in frozen food. And for everyone, there was always that well-remembered comfort food of childhood, Kraft Macaroni and Cheese Dinner.

The variety of choice for Americans at the turn of the 21st century would be nearly unbelievable to their great-grandparents. Americans, who seemed locked into their meat-and-potato fare at the beginning of the century, think nothing of having an Egg McMuffin for breakfast, a slice of pizza for lunch, and trying their hand at Chinese stir fry in their woks at home for dinner, as the new century dawns. Whereas an overwhelming majority of Americans 100 years ago would have been very wary of any food outside their usual fare, most of their descendants glory in their willingness to adventure. As long as American farms and ranches continue to pour forth their diversity of produce, and other nations provide a wonderful variety of products, our descendants will feast on Nature's bounty.

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Major Trends in U.S. Food Supply, 1909-99

How Food Consumption Is Measured

Food supply and utilization data, compiled and published annually by USDA's Economic Research Service, measure the flow of raw and semi-processed food commodities through the U.S. marketing system. The series provides continuous data back to 1909 and is typically used to measure changes in food consumption over time and to determine the approximate nutrient content of the food supply.

Food supply data, also known as food disappearance data, reflect the amount of the major food commodities entering the market, regardless of their final use. The total amount available for domestic consumption is estimated by food disappearance

data as the residual after exports, industrial uses, seed and feed use, and year-end inventories are subtracted from the sum of production, beginning inventories, and imports. The use of conversion factors allows for some subsequent processing, trimming, spoilage, and shrinkage in the distribution system. However, the estimates also include residual uses for which data are not available (such as miscellaneous nonfood uses, and changes in retail and consumer stocks). Consumption estimates derived from food disappearance data tend to overstate actual consumption because they include spoilage and waste accumulated through the marketing system and in the home. Food disappearance data are used more appropriately as indicators of trends in consumption over time.

Food disappearance estimates for animal products—meats, eggs, and dairy products—include that which was produced and consumed on farms and in rural nonfarm and urban households. Annual consumption estimates for both commercial vegetables (fig. 15) and vegetables from home gardens (fig. 16) were made through the early 1970's. Since then, estimates of home-garden production have been sporadic because of spotty data. Home production of other crop foods like cereal products, caloric sweeteners, and vegetable fats was deemed too little to bother estimating, even in 1909. ■

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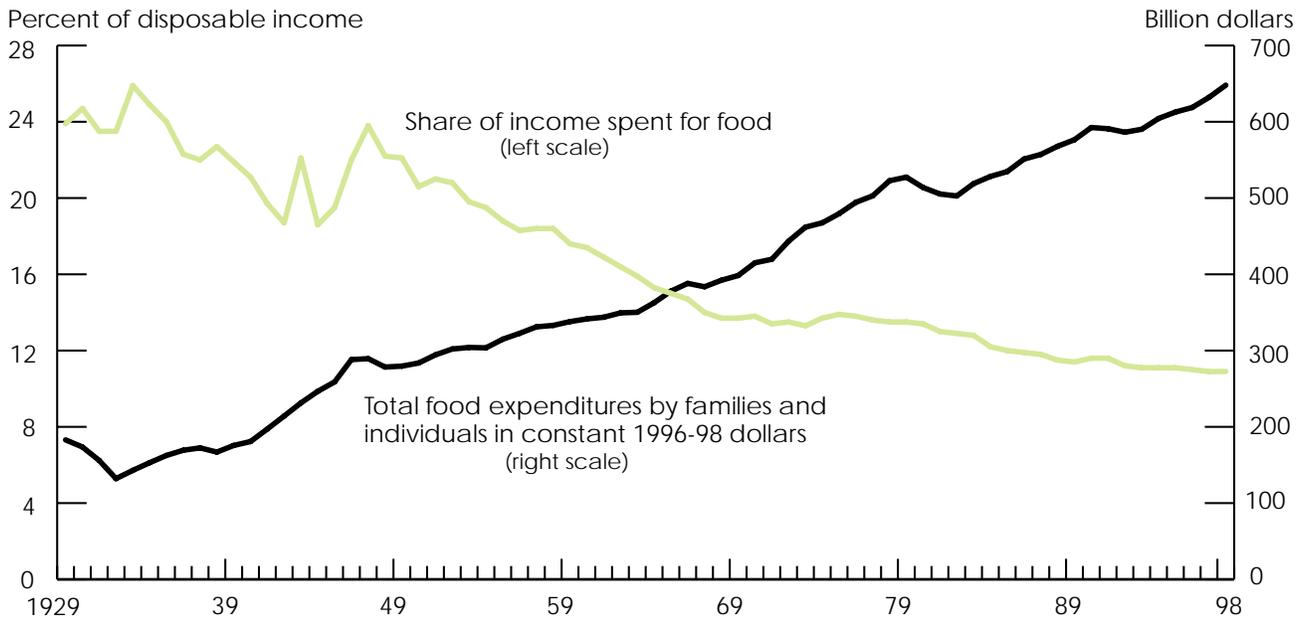


Credit: USDA

Food Spending

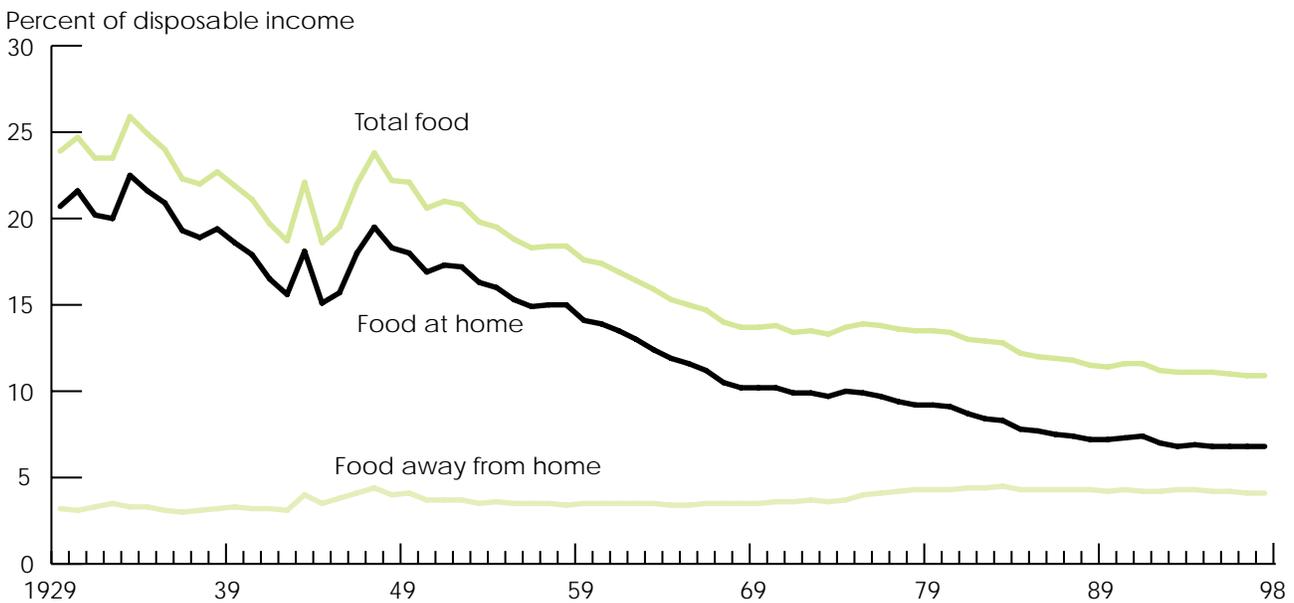
Total food expenditures by families and individuals, adjusted for inflation, increased in most years since the end of the Great Depression, yet the share of income spent for food declined from 24 percent in 1929 to 11 percent in 1998. Also, a higher proportion of consumers' food spending is going to food away from home. Both trends are indicators of an increasingly affluent society.

Figure 1
Food Expenditures



Source: USDA's Economic Research Service.

Figure 2
Share of Income Spent on Food by Families and Individuals

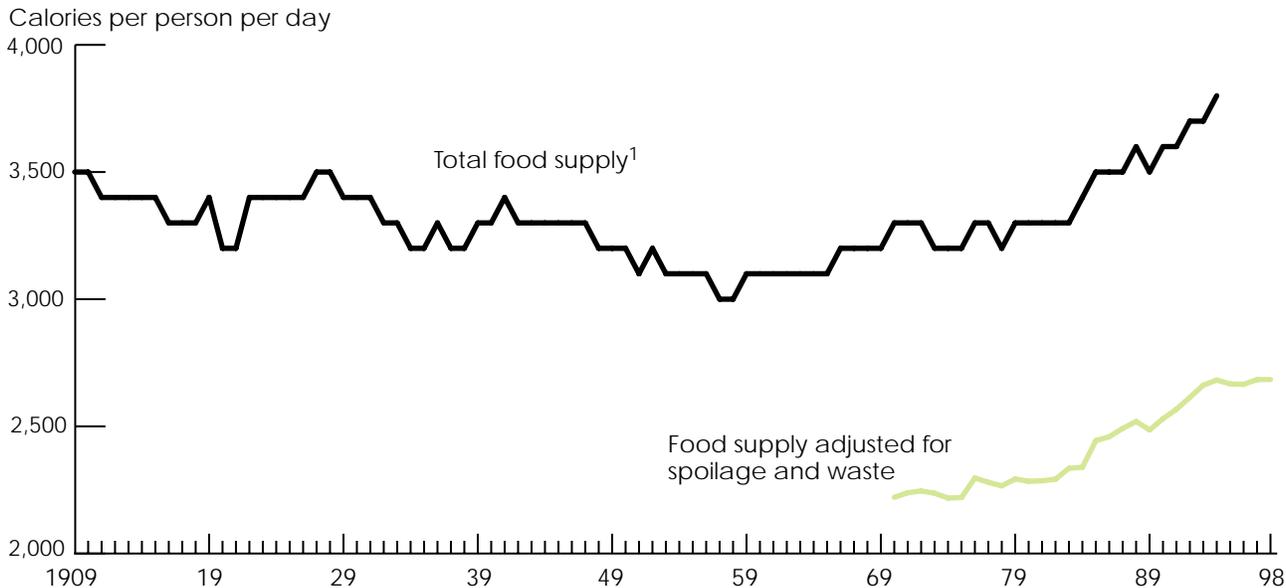


Source: USDA's Economic Research Service.

Food Supply

The U.S. food supply provided 300 calories more a day per person in 1994 than in 1909. Calories from the food supply, adjusted for spoilage and waste, increased from 2,220 per person in 1970 per day to 2,680 in 1997.

Figure 3
Calories Available

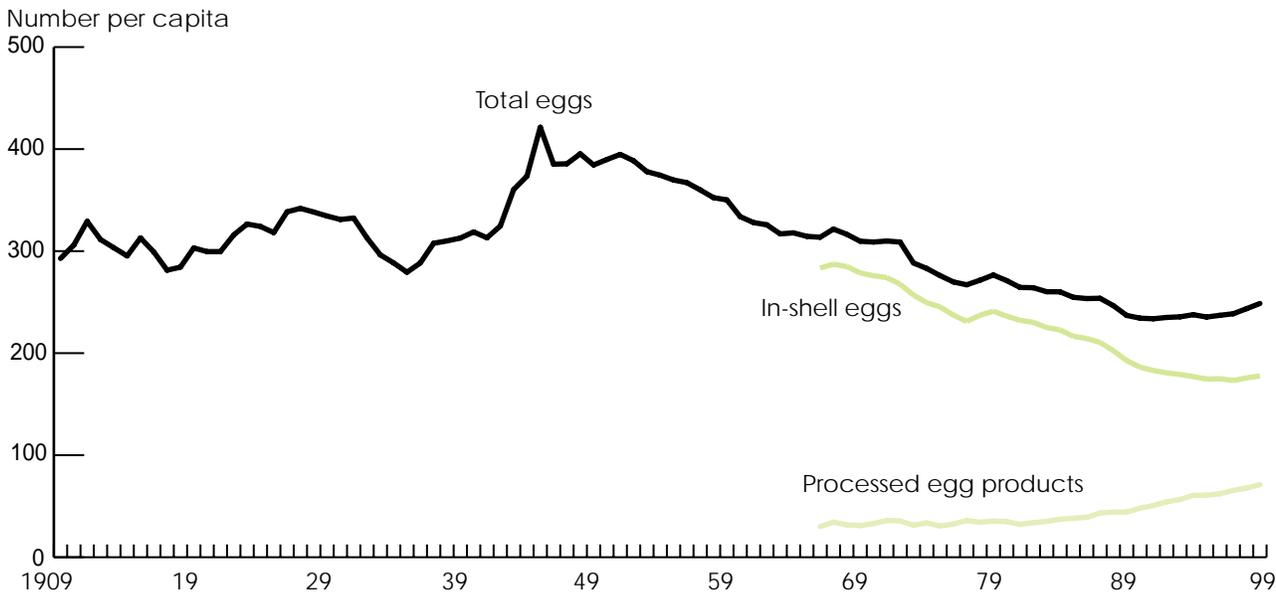


Source: USDA's Economic Research Service.

Egg Consumption

Long-term decline in egg consumption leveled off in the 1990's as rising use of processed egg products outpaced declining use of in-shell eggs.

Figure 4
Egg Consumption



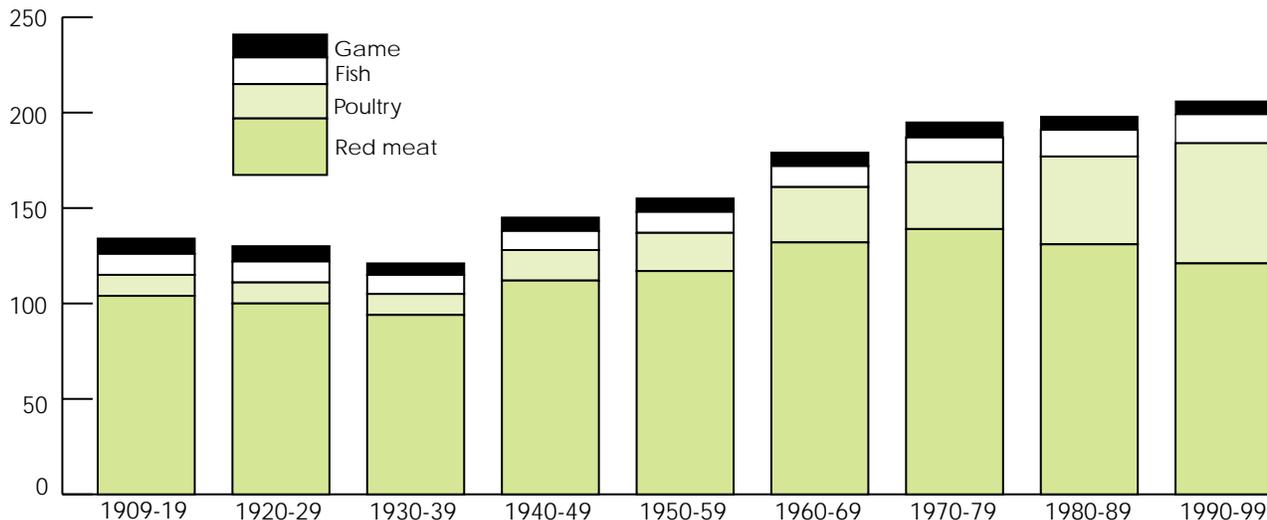
Source: USDA's Economic Research Service.

Meat Consumption

Total per capita meat consumption reached record highs in the 1990's. While red meat still dominates, poultry has increased in popularity. Between 1909 and 1999, consumption of chicken quintupled from 10 pounds per person a year to 54 pounds, which compares with increases in consumption of beef and pork of 24 percent and 15 percent.

Figure 5
Total Meat Consumption

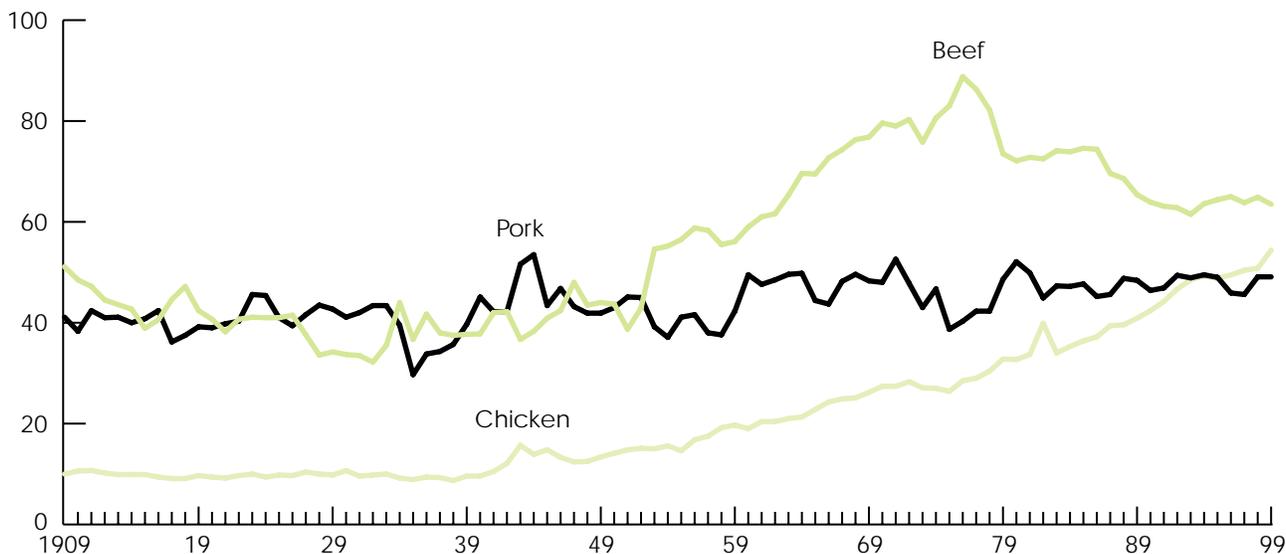
Pounds per capita, annual average¹



¹Boneless, trimmed weight. Includes organ meats.
Source: USDA's Economic Research Service.

Figure 6
Beef, Pork, and Chicken Consumption

Pounds per capita¹

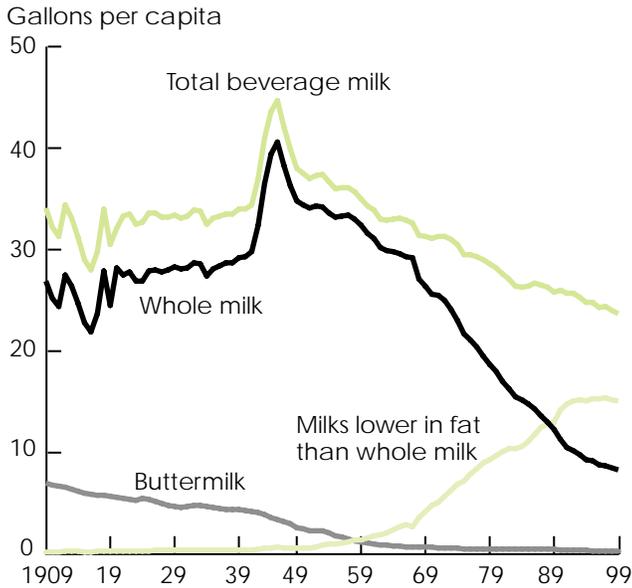


¹Boneless, trimmed weight. Excludes beef and pork organ meats.
Source: USDA's Economic Research Service.

Dairy Consumption

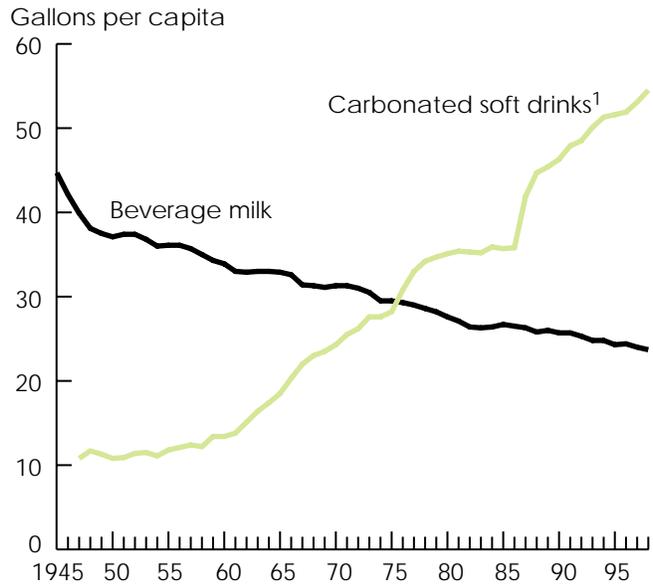
Beverage milk consumption reached record lows in the 1990's. Steep declines in whole milk and buttermilk far outpaced an increase in milks that were lower in fat than whole milk. In 1945, Americans drank more than four times as much milk as they did carbonated soft drinks. In 1998, they downed 2-1/3 times more soda than milk. In 1998, Americans consumed an average 7-1/2 times more cheese than in 1909.

Figure 7
Milk Consumption



Source: USDA's Economic Research Service.

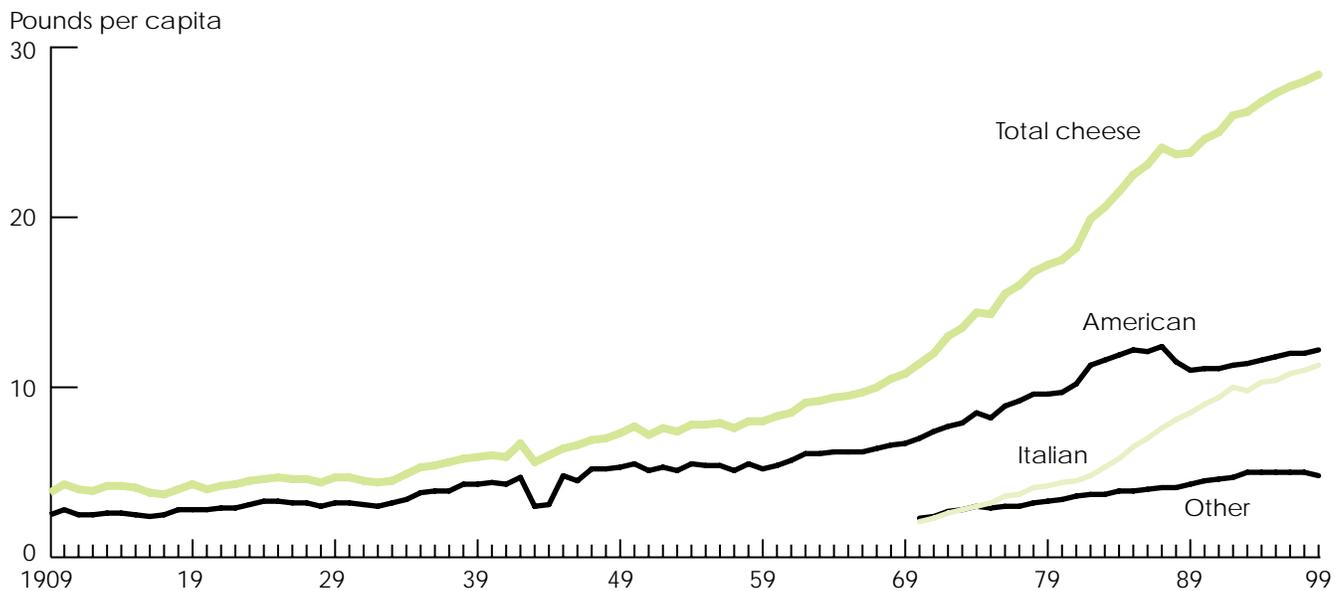
Figure 8
Milk Consumption Compared With Soft Drink Consumption



¹1947 is the first year for which soft drink consumption data are available.

Source: USDA's Economic Research Service.

Figure 9
Cheese Consumption

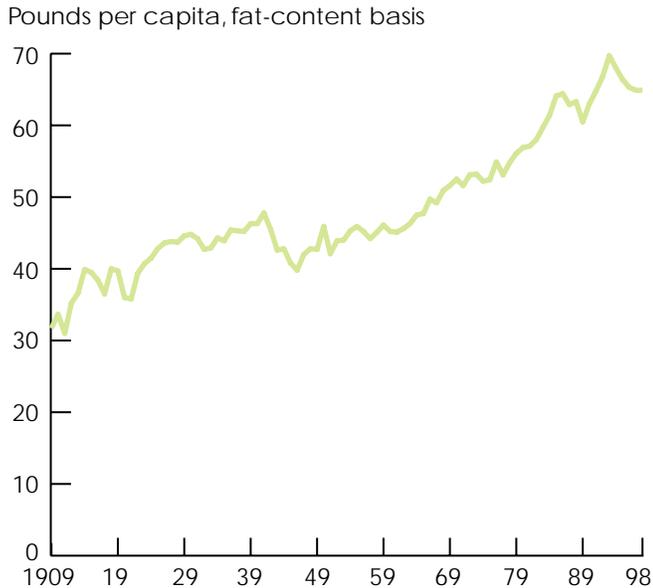


Source: USDA's Economic Research Service.

Fat Consumption

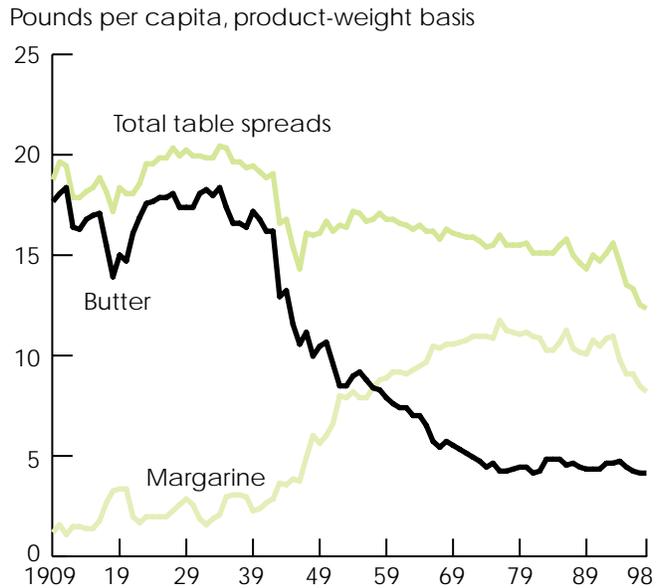
Consumption of added fats doubled between 1909 and 1998. Added fats include those used directly by consumers, such as butter on bread, as well as shortenings and oils used in commercially prepared cookies, pastries, and fried foods. Added fats do not include fats naturally present in foods, such as in milk and meat. Consumption of table spreads declined in the 1990's as concern about fat intake and trans fatty acids increased. Average annual consumption of salad and cooking oils was 13-1/2 times higher in the 1990's than in 1909-19.

Figure 10
Total Added Fats Consumption



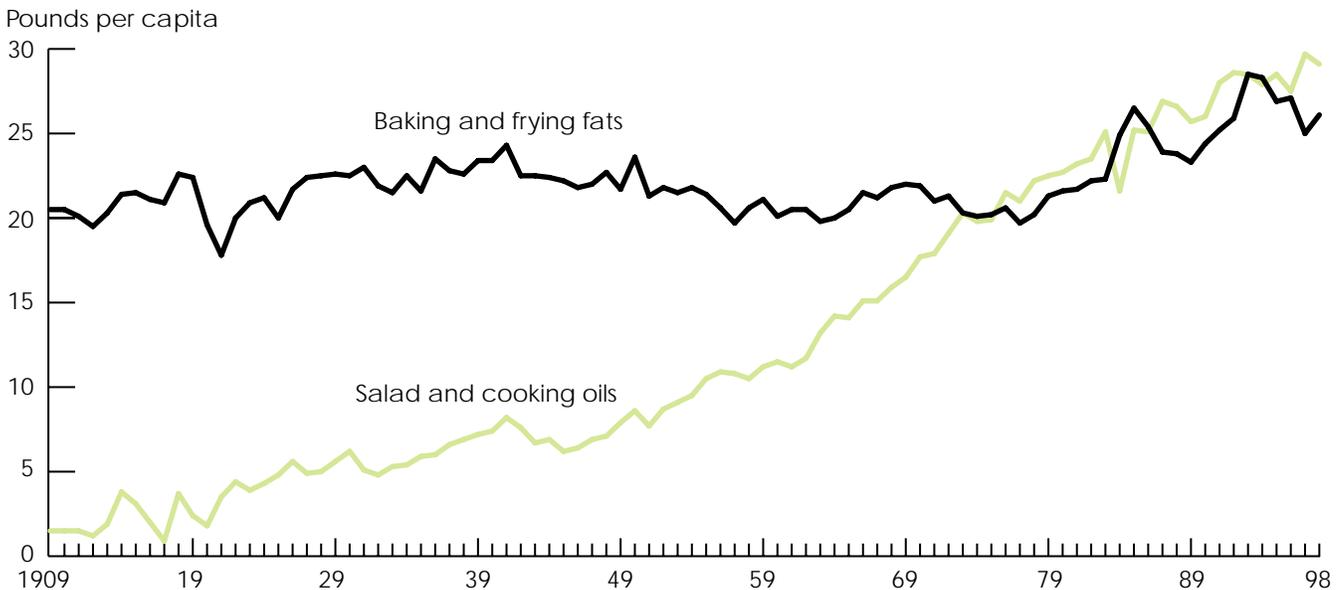
Source: USDA's Economic Research Service.

Figure 11
Table Spread Consumption



Source: USDA's Economic Research Service.

Figure 12
Salad and Cooking Oil Consumption

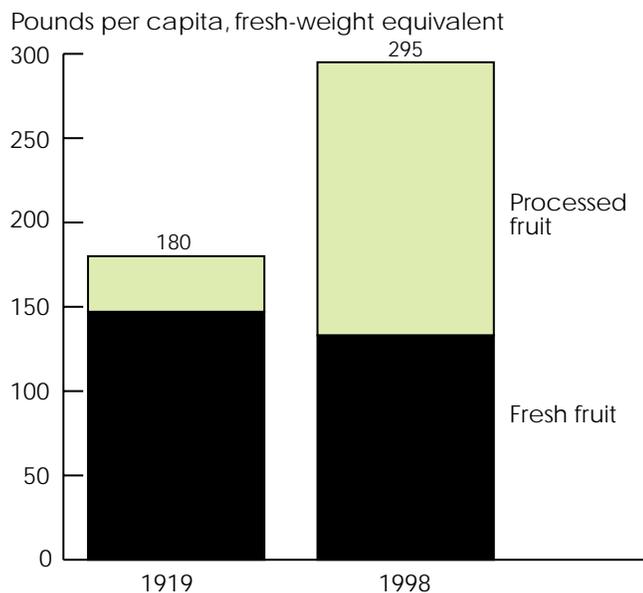


Source: USDA's Economic Research Service.

Fruit and Vegetable Consumption

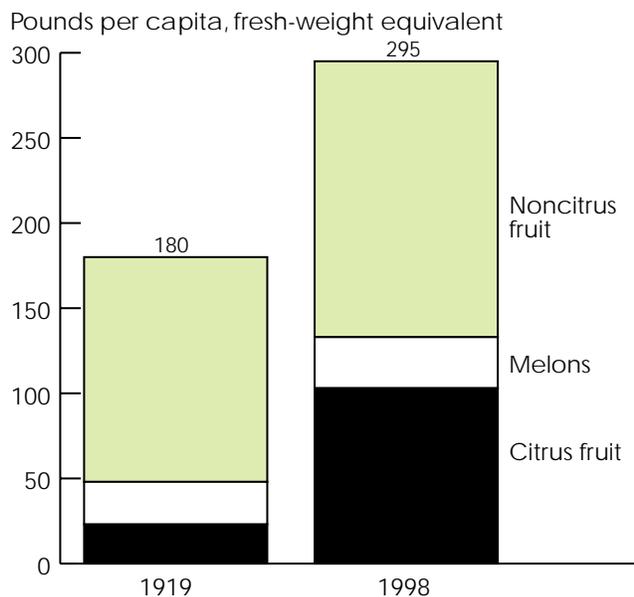
In 1998, Americans consumed a little less fresh fruit and a lot more processed fruit than in 1919. Americans also consumed an average 80 pounds more citrus fruit, 5 pounds more melons, and 30 pounds more noncitrus fruit in 1998 than in 1919. In 1919 compared with 1998, consumption of commercial vegetables was lower, but consumption of home-produced vegetables was higher.

Figure 13
Fresh and Processed Fruit Consumption



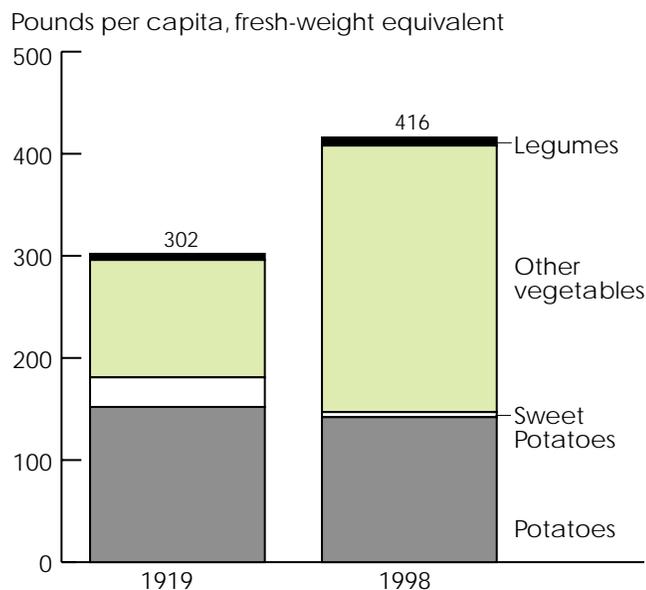
Source: USDA's Economic Research Service.

Figure 14
Citrus Fruit, Melon, and Noncitrus Fruit Consumption



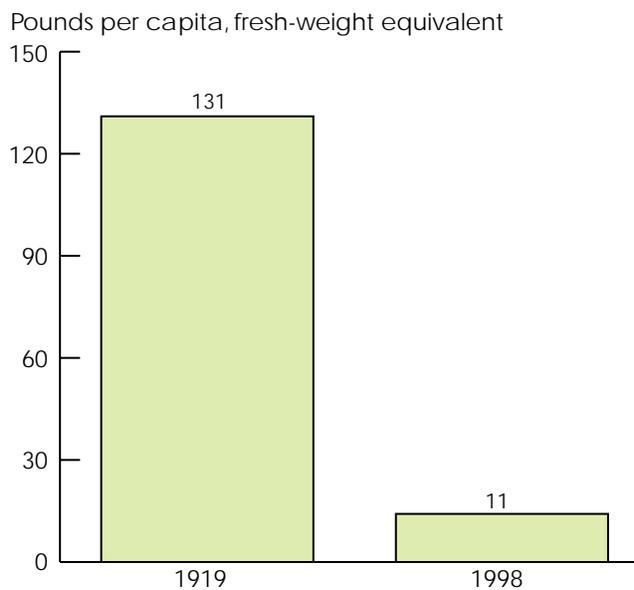
Source: USDA's Economic Research Service.

Figure 15
Commercial Vegetable Consumption



Source: USDA's Economic Research Service.

Figure 16
Home-Produced Vegetable Consumption



Source: USDA's Economic Research Service.

Grain Product Consumption

In 1998, Americans consumed 100 pounds less of grain products than in 1909.

Figure 17
Grain Product Consumption

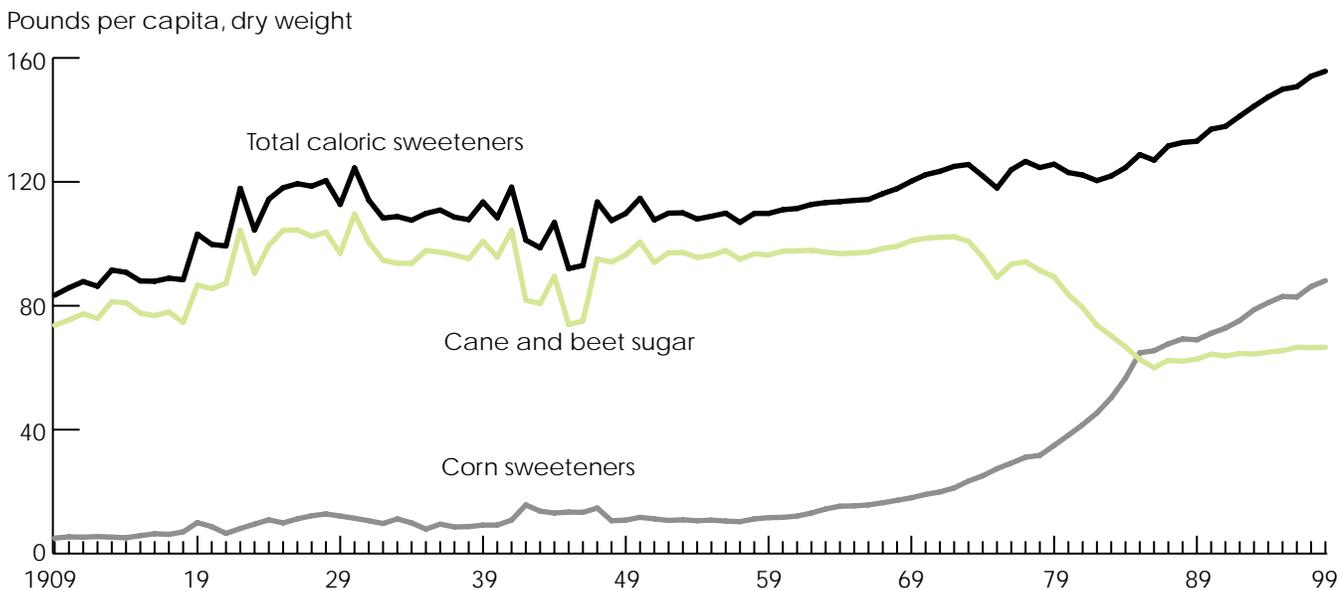


¹Total also includes oat, barley, and rye products not shown separately.
Source: USDA's Economic Research Service.

Added Sugar Consumption

Consumption of added sugars nearly doubled between 1909 and 1998.

Figure 18
Added Sugar Consumption



Source: USDA's Economic Research Service.

A Century of Population Growth and Change

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The United States began the 20th century with 76.2 million people. It ended the century with 275 million people, an extraordinary growth of about 200 million, or 3.6 times as many as there were in 1900 (fig. 1). U.S. demographic changes in the century have been just as dynamic, dramatic, surprising, and significant as so many other facets of American life. Population trends and characteristics help shape what is grown and eaten by the country's inhabitants. This article examines the most salient of these trends.

America Leaves Its Farm Roots

Among the many demographic changes in America in the 20th century, the urbanization of the population may be the most transforming. Thirty-five urbanized areas (cities plus densely settled suburbs) now have populations of over a million people, compared with just four areas in 1900 (New York, Chicago, Philadelphia, and Boston). Some of today's best known large urban areas hardly existed then. Phoenix had a population of 5,500; Miami

had only recently been incorporated and had 1,700 people. Las Vegas was so small it was not even recognized in the census until 1920. Los Angeles had begun its odyssey of growth and was up to 100,000 people, but by the 2000 Census, its urbanized area will be home to conservatively 12 million.

The United States of 1900 was a predominantly rural country, with 60 percent of its population living in the countryside or in towns of fewer than 2,500 residents (fig. 2). (Currently that percentage is below 25.) Nearly 40 percent of the population

still lived directly on farms, and numbered 30 million. (Today no more than 2 percent, or 5 million people, still live in farm-operator households.)

Although the end of the frontier had been proclaimed after the 1890 Census, new land was still being settled for farming in the Great Plains and the West in the opening decades of the 1900's. But by the end of World War I, the farm population had peaked. The supply of new land to farm had been exhausted, except where irrigation projects or drainage created more.



Throughout the 20th century, mechanization of farming separated millions of Americans from a life working the earth.

Credit: USDA

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And with the advent of tractors and other mechanization, farming began the rapid increase in worker productivity that continues to mark the industry and that released millions of people from the soil.

Most agricultural areas suffered demographically from this success. They welcomed the substitution of labor-saving tractors and other machinery for back-breaking labor, and proudly produced larger yields and better quality grains, produce, meats, or cotton. But they were often unable to develop enough alternative types of work to offset the loss of farm jobs, and their populations declined. Over 20 Midwestern counties went through the entire 20th century showing population loss in every decennial census, so sustained and substantial have the effects of agricultural change been.

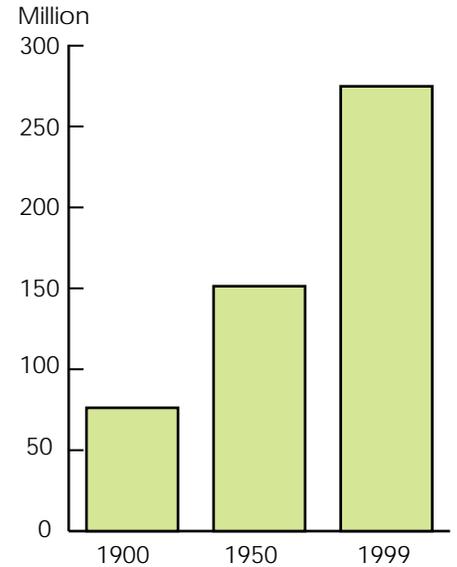
The 1920 Census results were nationally significant in two ways. They were the first to show the country with more than 100 million people, and the first to report an urban majority of 51 percent. The realization that Americans were no longer predominantly rural appears

to have been a bit of a shock, even though it was foreseeable, and even though "urban" was liberally defined. The feeling was epitomized by the action (or, more accurately, inaction) of the House of Representatives after the census results were announced. Members from rural States whose growth had been so limited during the 1910-20 decade that the States faced a loss of seats in the next Congress could not bring themselves to accept the results. The House already had 435 seats, and there was little sentiment to avoid the loss of rural seats by making the House larger.

In floor debates, some members revealed a distinct fear for the future of the country, with explicit distrust of an urban-dominated House, in part because of anxiety about the newer eastern and southern European immigrants who comprised an increasing proportion of big-city populations. Others said it was unfair to punish rural States for what they viewed as the patriotic movement of country people to the cities during World War I to work in defense industries. "Just as certain

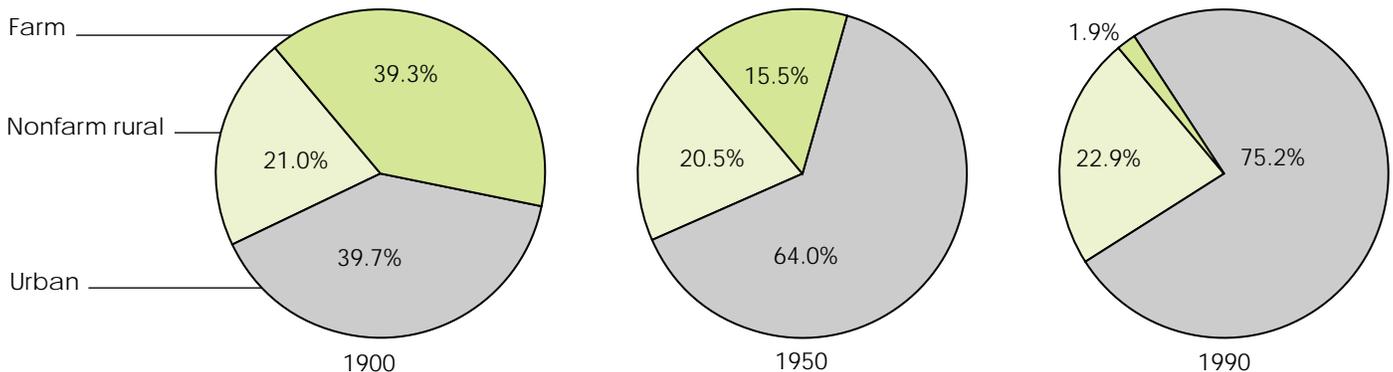
as God reigns," one Texas member declared, "in the economical readjustment of this country they must go back to the farms." A total stalemate resulted. And although apportionment is the constitutional

Figure 1
American Population Grew by 200 Million People in the 20th Century



Source: U.S. Census Bureau.

Figure 2
Urban and Farm Populations Were the Same Size in 1900; By 1990, Urban Population Was 40 Times as Large as Farm Population



Source: U.S. Census Bureau.

purpose of the Census, the House did not reapportion. The unprecedented result was that House seats continued to be based on the 1910 Census until the election of 1932. But the migration to the cities proved permanent.

In time, the movement away from farms reduced by millions the families who produced much of their own food—milk, eggs, vegetables, fruit, chickens, pork, and beef. It added greatly to those who became reliant on purchased food. And as those who remained in farming modernized and entered more into the cash economy, they, too, typically gave up home food production, except for vegetables, and joined the lines at the supermarket (see “Cooking Trends Echo Changing Roles of Women” elsewhere in this issue).

West and South See Greatest Population Gain

Although the population was concentrating residentially around cities and towns, it was decentralizing regionally. Most striking has been the growth of the West, where the 4.3 million residents of 1900 have become the 60 million of today, a fourteenfold increase (fig. 3). (The West is defined as all States containing or west of the Rocky Mountains, including Alaska and Hawaii.)

High rates of Western growth, relative to the rest of the country, have been a constant in every decade of the century. California has collected half of the growth, but all Western States except Montana have grown at multiples far higher than the country as a whole. The frontier may have been closed in the late 1800's, but the settlement of the West had only begun. Much of its

growth in recent decades has been driven by immigration.

The other major regional shift has been that to the South. That region's growth in population share has occurred almost entirely since 1950. The South had a third of the non-Western population in 1950, a trifle less than the proportion it had in 1900. Today it has 45 percent of that population and is far more populous than either the Northeast or the Midwest, which used to be its equals.

The South had been an underurbanized, undereducated, and heavily agricultural region. A successful transition to a modern industrial and services economy, boosted by the results of the civil rights revolution, and the rapid growth of Florida and other resort-retirement areas have been leading factors in the South's economic and demographic rise. Perhaps air conditioning has been also. As a product of these changes, the term “Sunbelt” has become a widely understood favorable metaphor for the character of most of the South, and parts of the West as well.

But despite the magnitude of the drift toward the West and South, it is instructive to note that the median center of the U.S. population is still no farther west or south than a point in southwestern Indiana. That is, half of the population still lives north of or east of this location, a measure of how dominant the earlier concentration of people in the Northeast and eastern Midwest had been.

Regional shifts in population can influence America's eating patterns. Regions often have distinctive food choices and cuisines, based on demographic composition, income levels, or the ethnic heritage of both older natives or more recent immigrants (see “Food Spending Varies Across the United States” elsewhere in this issue).

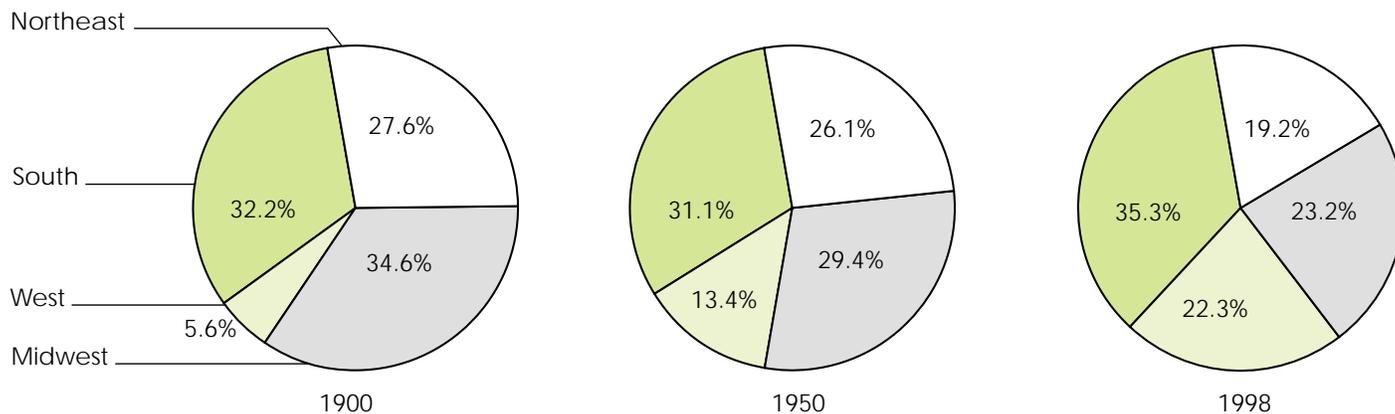
Immigration Spices Up the Melting Pot Again

As the United States entered the 20th century, its predominant White population still consisted primarily of northern and western European stock—Anglo-Colonial descendants, supplemented with numerous Germans, Irish, Scandinavians, and French. But, by the late 19th century, large-scale immigration from eastern and southern Europe, especially of Italians, Slavs (particularly Poles and Czechs), and Jews from Russia, began rapidly to add languages, cultures, and dietary habits to the melting pot that had not been common before.

This “new immigration” burgeoned from about 320,000 people in 1900 to 870,000 in 1913, before World War I interrupted the flow. The influx caused enough apprehension to produce a restrictive change in immigration law in 1921. But the gastronomic deed was done, as, for example, in the introduction of Italian cuisine, Jewish delicacies, and the entry of Greeks into the restaurant business.

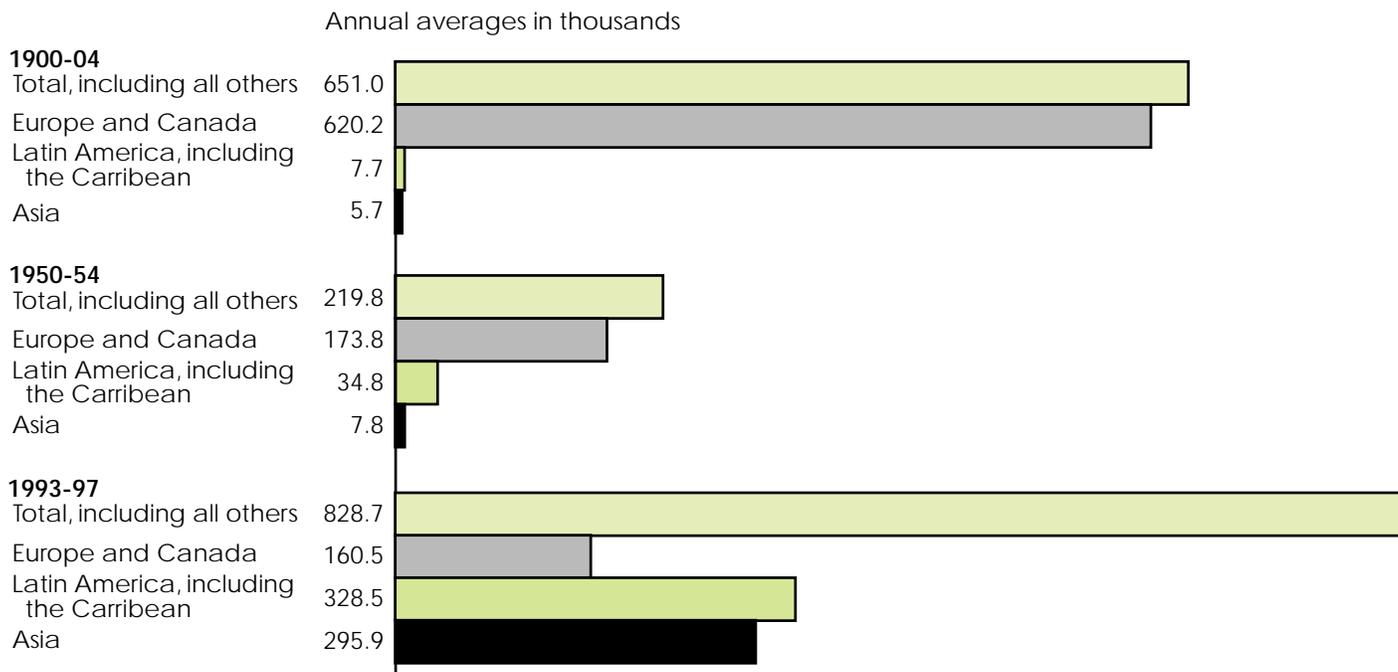
A relative immigration pause followed for over a generation. But, in the last third of the century, immigration was reshaped by a new law and two other factors—political asylum and illegal entry—that have greatly increased the inflow and changed its composition. The Immigration Reform Act of 1965, and its subsequent modifications, ended the racial and national-origin restrictions of the past. Immigrants grew rapidly thereafter and non-European nations quickly dominated the immigration streams, as they continue to today. Latin American countries, China, the Philippines, and India all are now prominent sources. The percentage of immigrants coming from Europe and

Figure 3
The Majority of Americans in 1998 Lived in the South and West



Source: U.S. Census Bureau.

Figure 4
Legal Immigration Shifted from European to Latin American and Asian Origins



Source: U.S. Immigration and Naturalization Service.

Canada dropped from 87 as late as 1940 to 16 percent in 1997 (fig. 4).

Recurring revolutions and wars created sporadic waves of refugee immigrants, such as those from Cuba, Indo-China, Iran, Iraq, Afghanistan, Haiti, East Africa, and now the Balkans. A large influx of illegal immigrants has also developed, especially from Latin America, adding greatly to the total. From all these factors, immigration into the United States now averages better than 800,000 annually, similar to the early part of the century, but in some years has exceeded 1 million.

The result has been to increase the ethnic mix further and to boost the proportion of people who are foreign born, after decades of decline. By 1998, 9.3 percent of the population was born abroad, up from 4.8 percent in 1970. More striking, however, is the fact that since 1990, 32 percent of all U.S. population growth has come from immigration, up from an already high figure of 22 percent in the 1980's.

One has only to visit any large urban supermarket to see the growing diversity of foods offered, whether imported or now domestically processed. Aromatic rices are an example, being highly favored by Asians, but also gaining general acceptance. In cities of any size, the restaurant scene has been visibly altered by the spread of Indian and Thai restaurants and Mexican-style fast food places.

The new "new immigration" is even being reflected in the entry of immigrants into farming, either to produce ethnic crops or to find a self-employment niche with older crops, often by substituting family labor for the more capital-intensive ways of native-born farmers.

Childbearing Rate Has Fluctuated

At the personal level, one of the major trends in American society during the century has been the reduction in childbearing and household size. In 1900, women who were 40 to 44 years old, and thus just ending their childbearing years, had borne an average of 455 children for every 100 women. It was an era without modern means of contraception and with low labor force participation by women.

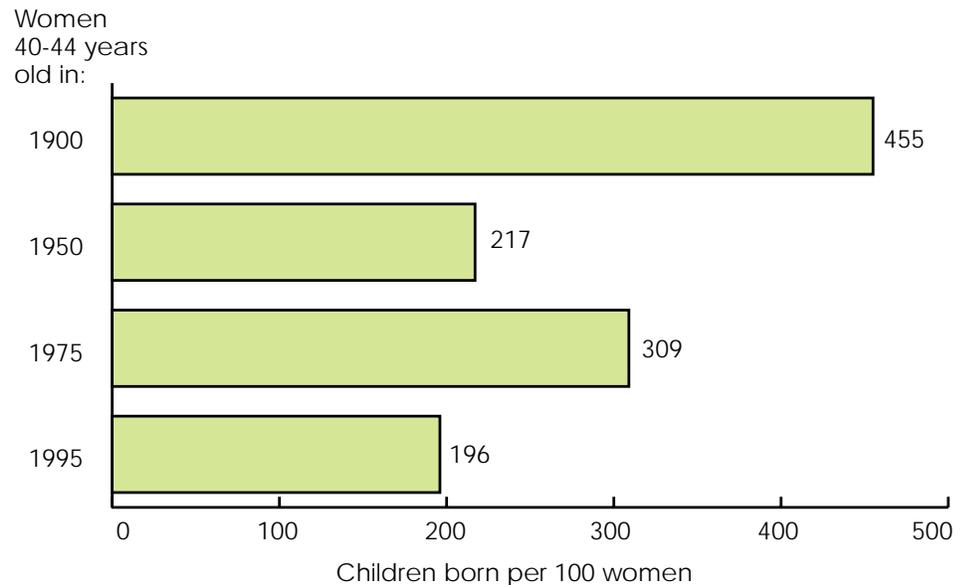
It was also a time when infant mortality was still high. Fully a tenth of all children born in the United States died within the first year of life. Today, medical and infant care are so advanced that infant mortality is only seven-tenths of 1 percent. But even with the mortality rates of 1900, close to twice as many children were being born as were needed to replace each generation. Hence, substantial population

growth was underway, quite apart from immigration.

From its rather high level in 1900, the course of 20th century childbearing was generally downward, with the "Baby Boom" period from the end of World War II to the mid-1960's being the one major exception (fig. 5). Birth rates had fallen to such a low level during the Great Depression of the 1930's, especially among urban and well-educated people, that the degree and duration of the Baby Boom came as a major surprise to demographers. The prevailing academic wisdom of the 1930's and 1940's was that the U.S. population would not reach more than 200 million by 2000 and might well be in decline before then.

There was particular astonishment, therefore, when from 1954 to 1964, over 4 million children were born each year, whereas before World War II, only one year (1921) had ever seen as many as 3 million. A higher percentage of people mar-

Figure 5
Number of Children Born Per 100 Women Fell Sharply Throughout the 20th Century, Interrupted by the Baby Boom



Source: U.S. Census Bureau, and partly estimated.

ried, and married early. Childbearing was not simply feasible, with good economic times, but also fashionable. Family size rose. (Women who were 40 to 44 years old in 1975 had borne an average of 309 children for each 100 women, compared with an average of 217 children per 100 women for those who were 40 to 44 years in 1950.) By 2000, the resulting huge bloc of children, who became the fabled "boomers," have either reached middle age or see it looming. As they have passed through successive age groups, they have greatly affected the number of people who consume the foods or practice the cooking or dining-out patterns that are associated with different ages.

Following the Baby Boom, changes in marriage and childbearing evolved that were just as inadequately forecasted as the Boom itself had been. Abortion became legal. Marriage was less universal. On one hand, childbearing became more limited and was delayed into later years, especially by well-educated couples, but at the same time, growing numbers of teenagers and young adults had children out of wedlock. These changes may have two main implications for food issues.

First is the fact that, since the early 1970's, birth rates for women of childbearing age have been at such a low level that they have been consistently lower than those during the 1930s' Depression years. They are even somewhat below generational replacement level, meaning that, if continued indefinitely, the population would begin to decline, except for immigration. This pattern is essentially confined to the non-Hispanic White population, but that population is still preponderant enough to produce a rate for the entire U.S. population that is below replacement. The U.S. population

continues to grow at present because the current childbearing group is still large, immigration is high, and people are living longer. But like most of Europe, the American population is currently choosing not to replace itself fully, a rather unprecedented social choice that contributes to the progressive rise in the average age of the population.

The second major current trend in the birth rate that is so different from the earlier part of the century is the proportion of births occurring outside of marriage. Data for the earliest part of the century are not available, but in 1940, only 4 percent of all births were to unwed parents. After 1960, the proportion began to rise rapidly. By 1975, a fourth of births were out of wedlock; by 1998, the incidence had reached a third of the total, a remarkable societal change.

The rise in out-of-wedlock childbearing, along with the coincident rise in divorce among married people, has led to major growth in the number of families headed by women with minor children and without a spouse present. Fully a third of female-headed families with children are poor as defined by Federal standards, several times the rate for two-parent families. Female-headed families with children now comprise more than half of all poor families, up from only a fourth in 1960. A trend of this magnitude has contributed greatly to the need for subsidized school meals and other public food assistance programs.

Americans Living Longer

Changes in life expectancy during the century have been as dramatic as those in any other measure. A child born in 1900 had a mean life expectancy of just 47.3 years, a figure 5 years below that of the continent of Africa today, and worse than that now found in any Asian nation

except Afghanistan. But longevity rose rapidly in the new century as public health measures, sanitation, immunization, and improved nutrition took hold, even before the era of antibiotics arrived. In particular, infant mortality and the toll from infectious diseases plummeted.

By 1950, life expectancy had risen to 68.2 years. Then, with the addition of antibiotics and high technology diagnostic and surgical procedures, it pulled ahead further in the next half century. By 1997, the mean expectancy at birth had risen to 76.5 years and it continues to climb. Median life expectancy—a less-used measure that indicates the age that half of the population will reach under current death rates—reached 80 years for the first time in 1997. The steady rise in length of life, combined with lower birth rates, elevates the proportion of the elderly in the population. And in doing so, it gradually alters household sizes, food consumption patterns, and eating locations.

One clear result of the aging of the population has been its contribution to the number of people who live alone. Tabulations on this aspect of living arrangements do not exist for the early part of the century, but by 1998, 26.3 million persons were living alone, more than triple their numbers since 1960. They occupied a full fourth of all housing units, and two-fifths of them were 65 years old or over, with this proportion steadily rising.

Whether its constituents are young or old, a many-fold rise in this smallest household type affects both food preferences and purchasing habits. Food spending per person is highest for one-person households and for persons 55 years old and over. Persons living alone also spend a higher proportion of their food money on eating out, rather than at home.

Projecting U.S. Population in 1900

In 1900 and the period of 10 years on either side of it, several projections were made of U.S. population for the 20th century. Most proved to be either far too low or far too high. Today, it is difficult to say which was the most widely held or influential at the time. One proved to be rather good, all things considered, and it was the closest to being an official forecast.

This was a projection by Henry Gannett of the U.S. Geological Survey for a National Conservation Commission report that was sent to Congress by President Theodore Roosevelt. Gannett projected 249 million people in 2000. In doing so, he was only 10 years off, for 249 million was the count in the 1990 Census. Another projection published in 1900 foresaw 386 million

by 2000. But even Gannett was essentially lucky, for such projections were of necessity just extrapolations of some curve of past Census data, rather than based on perceptions of coming changes in American life that would determine actual growth. There was not even a national vital statistics system in 1900.

The basic demographic data from which to project are much better today, both in completeness and detail. But it is difficult to foresee turning points in human behavior that affect population change, such as in preferred family size. And immigration has become something of a wild card in future growth, given the undocumented nature of much of it and the unpredictability of refugee flows.

nineties or higher. Just 1.3 million people were alive at so advanced an age in 1995.

The Census Bureau has also dared to estimate the ethnic composition of the population in 2050. At that point, the effect of the current era of immigration is dramatic. Again using the middle series, the Hispanic population (of any race) would number 96.5 million, nearly a fourth of the U.S. total, and more than 10 times the 9 million counted in 1970, the first census to identify this population nationally.

Asians and Pacific Islanders, who numbered just 7 million combined in 1990, would have a population of 34 million by 2050, because of their current and prospective high rate of immigration. The non-Hispanic White population would still be the largest of the major race/ethnic groups in 2050, with 206 million people, but would have been in slow decline for a generation because of its low level of childbearing and small number of immigrants. Non-Hispanic Blacks would number 54 million.

Demographers should be a humble breed for, like other futurists, they have often been wrong in their projections. But by their current best judgment, it is thought most likely that the population will grow on average about 2 million annually for the next half century, requiring continued substantial increases in food output and/or imports. And along with this growth should come further shifts in age and ethnic composition and location of people that will affect food consumption. ■

Hispanics and Elderly Projected To Increase

So, what can be expected in the new century? Periodically, the Census Bureau prepares estimates of the future population of the United States (see box). The Bureau currently has three series of U.S. population projections extending to the year 2050, which use variations in possible future trends in fertility, mortality, and immigration, producing high, middle, and low projections, all of which are deemed in the range of possibility.

Under the low assumption, the population would actually peak by 2028, and then gradually decline to 283 million people by 2050. The

middle series most closely conforms to current trends in fertility and immigration, with some further lowering of death rates. This series would yield 394 million people by 2050, a growth of 119 million from our expected 2000 figure, or 43 percent. This would be a slightly smaller amount of growth than that seen from 1950 to 2000. Under the high projection, the U.S. population would swell to an enormous 519 million by 2050.

Should the middle series prove most accurate, 20 percent of the population would be 65 years old or over in 2050, compared with 13 percent today. The surviving Baby Boomers would all be at advanced ages, with 9 million people in their

Cooking Trends Echo Changing Roles of Women

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Until recently, food preparation has been largely the work of women. One of the most important developments affecting America's eating habits in the past 100 years has been the evolution of new roles for women (and men), as more women have entered the workforce and families have become smaller. New technologies and changes in gender relationships have both played a role. Better kitchen appliances and the availability of more processed foods have cut the amount of time necessary to prepare food and helped make it possible for women to do more things outside the home. This, in turn, has brought even more demand for convenience in food preparation and has spurred the long-term trend toward eating out.

Domestic Labor Was Full Time for Most Women in 1900

A century ago, domestic labor took the equivalent of a full work week, mostly related to food. According to a survey at the time, a typical women spent 44 hours a week preparing meals and cleaning

up after them. Another 7 hours each went to cleaning and doing laundry. When child care was added in, women had little time left for leisure.

A woman's economic status, of course, could make a big difference in her housework load. Women in the upper middle classes and above often employed domestic servants to do most or all of these chores. In these cases, work by the woman of

the house consisted mainly of planning and management.

On the other hand, women from poor families had to balance housework and child care with the need to take outside work to support their families. A large portion of Southern Black women, for example, found employment as cooks and maids in the houses of White women. Many poorer city women worked in factories; many others,



By the 1930's, an air of efficiency dominated as women spent less time in sleek, up-to-date kitchens full of modern appliances. Rural homes modernized less quickly as electricity slowly moved out from urban areas.

Credit: USDA

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especially immigrants, did manufacturing work at home. Overall, 20.6 percent of women over the age of 15 were in the paid labor force in 1900. Only 5.6 percent of married women were counted in the labor force, however (fig. 1). Farm women—rarely included in the labor force—also usually made a cash contribution to the farm in addition to housework, often raising poultry and eggs and managing the dairy.

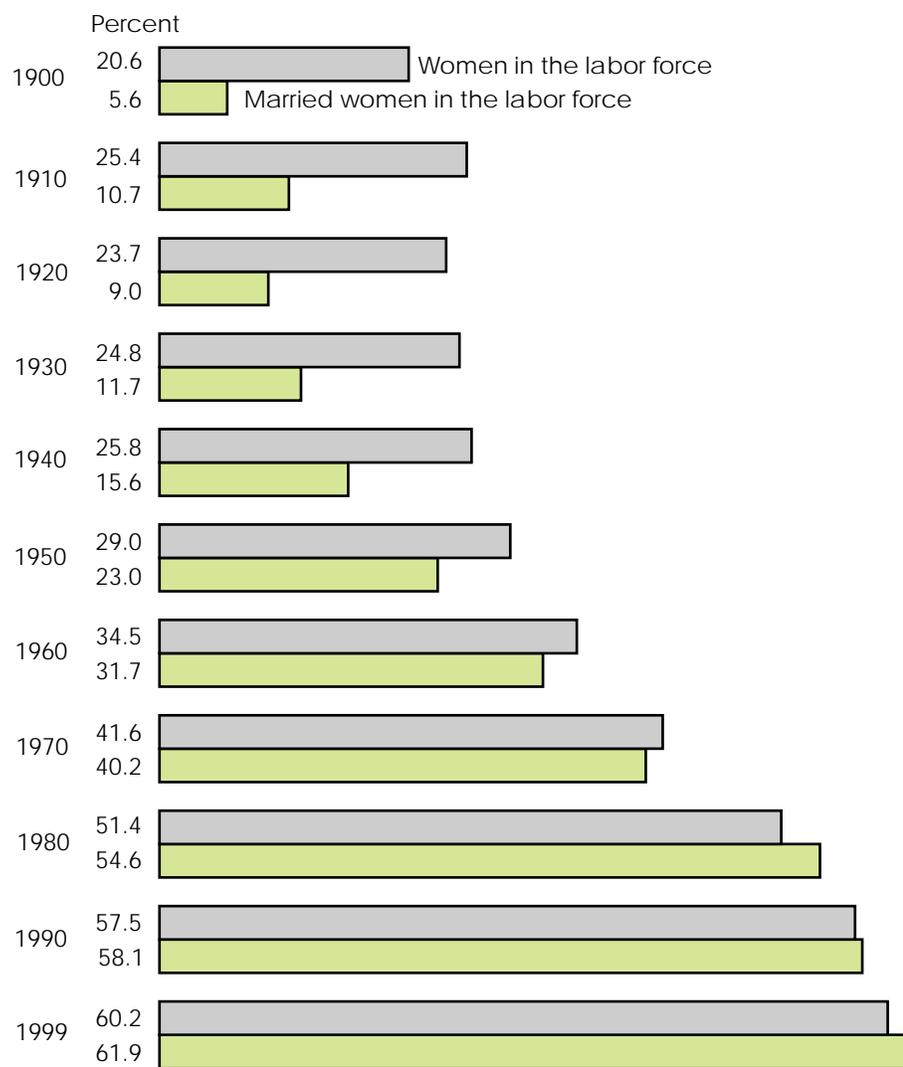
Women were usually the gardeners as well, and many women canned or dried food from their gardens for year-round consumption. This was especially true in rural areas—where 60 percent of the population lived in 1900—but many women in towns also gardened or kept a few chickens. The relatively large average household size of 1900 (4.8 family members) added to the burden of keeping house but could

also provide some relief. While only 5.1 percent of households had just one person, more than 20 percent contained seven or more. Women with older children or adult female relatives living with them could count on some help in doing housework.

Food preparation in 1900 was still very time-consuming. The coal and wood stoves commonly used were a big improvement over the open-hearth cooking practiced by earlier Americans, but were labor intensive. Wood had to be cut and coal hauled for fuel. Soot from stoves complicated cleaning. Since few houses had indoor plumbing, water for cooking and all other purposes had to be pumped and carried in from outside. Most food was still prepared from scratch. Bread was baked at home in rural areas, with one day each week being largely devoted to baking. Ice boxes were widely used in towns to keep food cool, as were springs on farms, but much store- or market-bought food had to be purchased fresh and used quickly in season. Women who canned part of the harvest found the job rewarding but laborious.

However, 1900 saw signs of changes to come that would lighten the burden of food preparation. Electric and gas lines reached an increasing number of urban houses, setting the stage for the impressive array of small appliances that would later appear on the market. A number of new utensils had already been introduced: specialized pots and pans, measuring cups and spoons, and a variety of useful gadgets, such as apple corers and mechanical beaters. Processed foods were beginning to be seen in more groceries. Dry cereals, introduced in the 1890's as health foods, replaced cooked breakfasts in many households. Canned goods increased in number and variety to include many fruits and vegetables, some meats, and condensed soups.

Figure 1
The Share of Married Women in the U.S. Labor Force Now Equals That of All Women



Source: U.S. Bureau of Census and Bureau of Labor Statistics.

Moreover, nutritionists at the turn of the century urged Americans to scale back the large, heavy meals that had characterized cooking in the late 19th century and replace them with simpler, lighter meals (see "America's Fascination With Nutrition" elsewhere in this issue). Women who took this advice found they could also save time in the kitchen. Nutrition education was largely undertaken by home economists, a growing group of professional women who, by 1900, were finding a place not only in women's colleges but in public high schools. Home economists exposed school-age girls to the new science of nutrition, to new ideas about the efficient organization of housework, and to new appliances.

Home economics got a strong boost from the establishment of a national extension service by the U.S. Department of Agriculture in 1914. Quickly growing into a system that reached most rural counties, the extension service had home economists teach by visiting homes, giving lectures, forming home-economics study clubs, and conducting tours so that women could inspect the latest in household conveniences, water systems, and arrangement of work spaces.

New Technologies, Diets Benefit 1920's and 1930's "New Woman"

By the 1920's, the incipient changes at the turn of the century were beginning to transform women and their work. Breaking with Victorian past, the "new woman" of the 1920's was more likely to be employed (11.7 percent of married women were in the labor force by 1930), more likely to have attended high school, and more likely to take an interest in activities outside the home. Starting in 1920, women could directly influence the political process by voting, and they readily

got behind the wheels of the newly affordable, massed-produced automobiles that were flooding the market. These women still expected to marry and raise children, but they eagerly sought new machines and gadgets that could reduce the time spent on housework.

New technology was altering housework in the 1920's. By the mid-1920's electric washing machines, irons, and vacuum cleaners were widely used. Electric or gas ranges were rapidly supplanting maintenance-heavy wood and coal ranges. Electric refrigerators were also starting to replace less reliable ice boxes. Toasters, electric mixers, and other conveniences likewise gained in popularity. The up-to-date kitchen of the 1920's, with its neat arrangement of sleek appliances, bore some resemblance to the scientific laboratory and carried the same aura of efficiency and modernity.

Of course, much of this new technology depended on electricity, which was slower in reaching rural areas. Urban areas grew at a much faster pace—they had surpassed rural areas in population by 1920—and could be wired for electricity more economically. In 1930, almost 85 percent of nonfarm dwellings had electricity, nearly double the percentage in 1920. By contrast, only 10.4 percent of farm dwellings were connected to the electric power grid in 1930. Nevertheless, electric power usage by residential customers nationwide more than tripled between 1920 and 1930.

Changes in diet were also saving time for women. The trend toward lighter and simpler foods accelerated in the 1920's, spurred by the wartime drive for leaner eating and the newly popular slim ideal for women. Just as store-bought cereals had replaced cooked breakfasts for many Americans, so sandwiches and other light fare replaced hot lunches. This was especially true for working people, who patronized the growing variety of lunch counters

and other quick-service eateries. An array of new convenience foods was carried in grocery stores—packaged desserts, pancake mixes, bouillon cubes, and others. Commercially canned goods also multiplied. Almost any fruit or vegetable and even some main courses, such as spaghetti, could be bought canned in the 1920's. Rural women scaled back their home production and preservation of fruits, vegetables, and meats and began buying more processed food in stores, now easier to reach by automobile.

Surveys showed that, by the mid-1920's, the time spent by women in meal preparation and cleanup had fallen from 44 hours per week to under 30 hours. Urban women spent several hours less than rural women. Middle class women who had depended on servants to do domestic work were especially glad for the change because, by the 1920's, servants were becoming harder to find as the status of that occupation dwindled. At the same time, advertisements in women's magazines often depicted middle class women performing tasks that earlier ads had shown servants doing.

During the Depression decade of the 1930's, the percentage of women in the workforce continued to rise slowly. With unemployment high, however, the popular press put renewed emphasis on women's role in the home for fear that women might be taking jobs from men. Home economists stressed wise food management so that families with limited resources could stretch their food dollars. Despite the Depression, labor-saving devices continued to enter the kitchen. The establishment of the Rural Electrification Administration in 1935, which greatly sped the electrification of rural areas, allowed many rural women to enjoy some of the electric appliances previously available only in towns. It also helped increase the number of rural houses

with indoor plumbing—an essential part of the modern kitchen. Girls who were not acquainted with modern appliances at home might be introduced to them in school, often thanks to donations by appliance manufacturers and electric and gas companies. By 1938, nearly 90 percent of junior and senior high school girls took home economics or similar classes.

World War II Brings More Women Into Workforce

World War II brought a quick end to the Depression and unemployment. With millions of men away at war, women joined the labor force in unprecedented numbers. By 1944, a record 35 percent of women were in the labor force, including a quarter of all married women. Many of these working women had to juggle outside employment with household duties. Women were urged to maintain their focus on family and home, even if most of their day was spent in a war factory.

The war made housework more challenging for all women. Food rationing complicated meal planning, while wartime shortages of nonmilitary goods made it difficult to obtain conveniences like refrigerators, washing machines, and other appliances. Many domestic workers—especially Southern Black women—left middle class households for more lucrative jobs in defense plants. Government pamphlets and advertisers offered advice on how women could win the war on the “kitchen front” through purchasing food prudently, salvaging fats and greases, and carefully conserving scarce meats. With USDA encouragement, millions of women planted victory gardens and rediscovered lost home canning skills. By 1943, more than 40 percent of the fresh vegetables consumed in the United States were grown in some 20 million victory gardens.

Postwar America: Prosperity and Convenience

Americans emerged from World War II prosperous and eager to return to peacetime pursuits. Female employment dropped as soldiers came back and many women returned to their customary roles in the home. As the postwar baby boom got underway, women’s magazines reinforced the traditional ideal of woman as homemakers and mothers. Educators suggested that the increasing number of women going to college ought to receive better instruction in household management so they would be ready for the day when they gave up their careers for marriage. The ideal wife, according to popular magazines, was intelligent and well-educated, could cook delicious meals, did housework efficiently, and spent lots of time nurturing her children.

But postwar prosperity and technology were creating a climate that would eventually bring an end to women being seen as mainly homemakers. Following the war, the United States embarked on a long period of sustained economic growth. The technological revolution in agriculture lowered food prices and spurred an exodus of farm families to cities, where they were often better paid. Many blue-collar families were able to purchase houses for the first time, and millions of those houses were built in the burgeoning suburbs. The new houses featured modern kitchens and practical designs that made housework more efficient. Rising incomes allowed families to buy the latest appliances. By 1950, 80 percent of families owned mechanical refrigerators, and by 1960, nearly three-quarters owned electric washing machines. Progress was especially apparent in rural areas, where over 90 percent of rural families received electric service by 1953.

Never had food been easier to prepare than in the 1950’s. Housewives could now choose from a variety of frozen foods, a technology that had been important to the military during the war. In 1951, the first frozen pot pies appeared, followed in 1954 by the type of meal that became a symbol of the 1950’s, the TV dinner. Women who had taken up home canning during the war generally gave it up in preference for store-bought processed foods. This included rural women, who, as the general farm was replaced by increasingly specialized operations, became more like urban women in their shopping habits. More packaged mixes also appeared on the shelves, including mixes for staples like mashed potatoes. Cookbooks and women’s magazines of the period featured recipes using the new frozen, canned, and powdered foods. Casseroles (sometimes consisting almost entirely of canned foods) appealed for their simplicity. Some women also got a break when their husbands took up barbecuing, a popular summertime activity by the late 1950’s.

Time spent on meal preparation and clean-up dropped below 20 hours a week in the 1950’s. Some other aspects of maintaining a house, such as shopping, tended to expand. Rising standards of cleanliness also canceled out some of the technological gains in house cleaning and laundry work. Nevertheless, the time and labor necessary for basic household chores had fallen substantially since the turn of the century. This was a crucial development because no longer could housework be seen as an arduous, more-than-full-time job.

While nearly everyone held to the importance of mothers staying home to care for children, an increasing number of women looked to outside work to enrich their lives as well as enhance their family incomes. After the postwar

drop in female employment, the long-term upward trend started again (fig. 2). By 1960, 34.5 percent of women were again in the labor force, including a record 31.7 percent of married women. This happened even though women were paid substantially less than men and had few opportunities outside of jobs traditionally considered suitable for women.

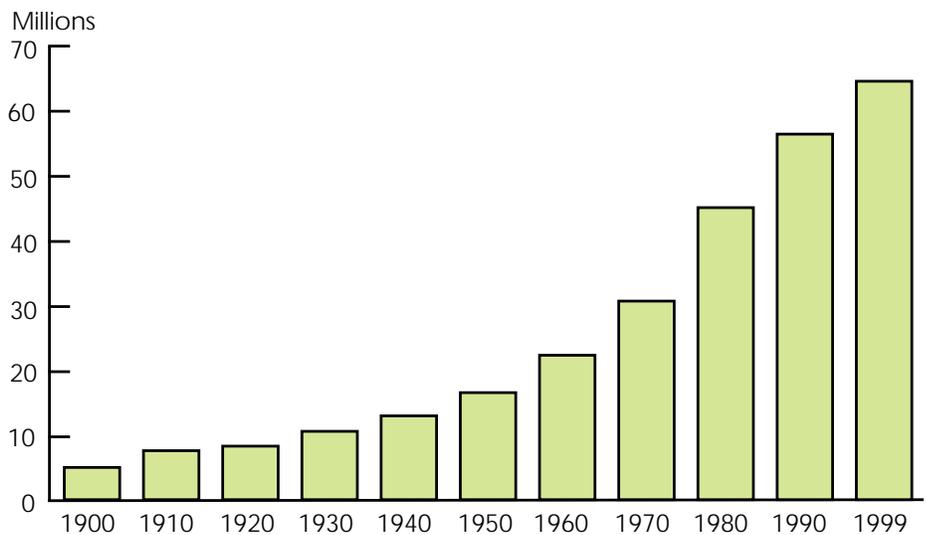
New Roles for Women—and Men—in the 1960's and 1970's

The forces changing women's lives, which had become evident by the 1950's, accelerated in the 1960's and 1970's. Spurred by labor-saving household technology and the civil rights revolution, women were ready to question the old assumptions about their position in society. The Civil Rights Act of 1964 outlawed discrimination not only against racial minorities but also on the basis of sex. This became the legal basis for a profound change in the workplace by which jobs of every description opened to women.

At the same time, the women's liberation movement led to a rethinking of gender roles. People of both sexes came increasingly to see careers for women as a viable alternative to women as full-time homemakers. By 1980, more than half of women over 16 were in the labor force. Similarly, public opinion began to look with favor on men who shared housekeeping and child care with their wives. This included kitchen duty. Men whose cooking expertise had been limited to the outside grill or the can opener began to take a deeper interest in cooking.

The trend toward convenience continued in the 1960's and 1970's. Helpful technology continued apace. These decades witnessed fads for crockpots, blenders, food proces-

Figure 2
Women's Presence in the U.S. Labor Force Has Increased Sharply Since 1960



Source: U.S. Bureau of Census and Bureau of Labor Statistics.

sors, and juicers. The new gadgets were often shipped with cookbooks promising a myriad of uses for each one. Nonstick pans cut cleanup time as did automatic dishwashers, which were becoming standard equipment.

Another trend that saved time in the kitchen was eating out. Once done mainly by travelers and office workers, eating out became popular with families when moderately priced restaurant chains such as Howard Johnson's spread across the country in the postwar era. By the 1960's, fast food outlets added another option (see "American Cuisine in the 20th Century" elsewhere in this issue). Families who lacked the time for even sit-down restaurant meals could pick up fast food and eat it in their cars or take it home.

One thing that made fast food so attractive was the changing family of the 1960's and 1970's. Although the Baby Boom ended and household size continued to shrink, rising divorce rates meant that more chil-

dren were being raised by only one parent. The tradition of family meals was on the wane. With breakfast on the run and lunch at the office or school, it was no wonder that the weekly time spent on meal preparation and cleanup had dropped to just 10 hours in 1975.

Yet, paradoxically, these same years saw a reaction against the bland food of the 1950's and a renewed interest in creative cooking. Gourmet cooking, with its often exotic sauces and time-consuming methods, became popular in the 1960's, thanks to Julia Child and a variety of new cookbooks that urged cooks to abandon cans, jars, and mixes for fresh ingredients. This was especially true of French cooking, driven by the postwar popularity of American tourism in Europe. Postwar prosperity also encouraged Americans to look for ways to improve the quality of their lives, such as sampling the world's better cuisines. In the 1970's, a new wave of immigration extended the gourmet cooking vogue to a variety

of ethnic foods, such as Asian and Hispanic. These could be tried at new ethnic restaurants and explored in depth through a wave of new cookbooks that brought recipes from every corner of the world to American cooks. American regional cooking also experienced a revival in the 1970's, thanks in part to the 1976 bicentennial celebration.

The desire for high-quality food created a dilemma for home cooks. Those who took up gourmet cooking were rarely willing to abandon speed and convenience entirely, fueling an interest in preparing such food without sacrificing time. Cooking courses, for example, claimed to offer simple ways to learn the secrets of almost any cuisine. Many cooks were likewise convinced that owning the right gadgets would solve the problem. Specialized kitchen equipment stores (themselves a new phenomenon) happily supplied woks, crepe and omelette pans, yogurt makers, fondue pots, wire whisks, and many other utensils to buyers who hoped that the right equipment would make gourmet cooking easy. Another solution was recipes that promised superior results in a few simple steps. This hope was aptly symbolized by Pierre Franey's "60-Minute Gourmet" column, which began its long run in the *New York Times* in 1975. A number of cookbooks adopted the same approach.

Today's Desire for Convenience Coexists With Older Ideals

American cooking habits in the 1980's and 1990's reflect the effects of hectic work and home schedules. The number of hours worked has increased for many Americans over the past two decades, especially among professionals and managers. More women are choosing full-time over part-time work. By 1998, only a quarter of married couples with one

or more persons in the labor force conformed to the traditional family where the husband had a job and the wife stayed at home. Almost 70 percent of women in such couples with children under 18 were in the labor force. Moreover, the percentage of one-parent families has risen from 9.1 percent of all families in 1960 to 27.3 percent in 1998. People living in two-earner and single-parent households have less time to fix meals. In addition, the number of people living alone—a group with little incentive to spend time in the kitchen—now makes up a quarter of all households (see "A Century of Population Growth and Change" elsewhere in this issue).

These changes have worked against eating at home. Time spent on meal preparation has continued to drop. Today, though, the reason has less to do with technological advances in the kitchen than with lack of time. One new appliance that has been a time-saver is the microwave oven. Widely purchased in the 1980's, over 90 percent of households have one today. Recent surveys have also revealed that many Americans feel they lack the knowledge necessary to cook well.

In 1998, 47 percent of the food dollar was spent on food away from home, compared with only 30 percent in 1965. The more recent increase came mainly from fast food outlets, which now exceed restaurants and lunch rooms in sales. Since the 1970's, even breakfast has been available at fast food outlets. Snacking has also increased in popularity. For young people especially, snacks often replace meals.

Yet older ideals about the importance of good home eating to family life have persisted in the face of changing practices. Gourmet cooking, cooking courses, and cookbooks remain popular, perhaps more so than ever. Bread makers and rice cookers have joined the list of new appliances purchased with hope, even if soon relegated to the back of

the counter. Gourmet kitchens have become one of the most demanded items in new houses, expressing perhaps more of a dream than a reality.

Today, women still do most of the cooking but, in our smaller and more mobile families, men often share at least part of the load. Even at a time when fewer families gather together for supper and when the tradition of Sunday dinner has been in decline for decades, popular magazines still promote the family meal. The well-prepared meal, indeed, has come to be seen as something that can help hold families together. Food industry analysts have observed that, to keep meals in the home, some cooks are using fewer dishes prepared from scratch (only 55 percent of American dinners have one or more homemade dish, according to one survey), cooking larger meals so the leftovers can be used for a second meal, and making more one-dish meals to reduce side dishes. Food processors have continued to introduce conveniences that make home cooking easier, such as individually wrapped hamburger patties and marinated meats.

Another thing that has helped keep home cooking alive is concern for nutrition, higher now than it has ever been. Scientists have discovered many new links between food and health in the past 20 years. This has not prevented the steady rise in fast food and high-fat/empty-calorie snacking, but many people are making an effort to improve their nutrition. It is easier to lower fat intake with home-prepared foods than to find low-fat foods at fast food outlets. But nutritious food is often perceived as taking longer to fix. Early in the century, good nutrition meant simplifying meals. Today it often means adding more variety and more fresh ingredients, which can lengthen preparation time. The growing popularity of natural foods supermarkets and farmers' markets shows that many people are willing

to seek out fresh, less-processed foods. Recent developments, such as precut vegetable packages and salad bars in grocery stores, have shortened the preparation time for using fresh ingredients.

Finally, a new trend has combined both the desire for convenience and the ideal of the home family meal: complete meals eaten but not prepared at home, such as home meal replacements—fully-prepared meals, sold mainly in grocery stores—that can offer a more nutritious alternative to much of the food sold in fast food outlets. Sales of home meal replacements at supermarkets soared in the 1990's.

Another growth area has been home delivery of restaurant food, which has moved far beyond pizza. This growth is reflected in the number of restaurant meals consumed off the premises. Between 1984 and 1996, the number of such meals has grown 51 percent and now exceeds meals consumed on-premises, though, of course, fast food accounts for part of this growth. The increase

has been especially strong for diners. The trend toward bringing meals prepared by eating places or grocery stores into the home will likely continue, as the food industry searches for new ways for busy families to share meals together around the dinner table.

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A Taste of the 20th Century

1900's

1900—Hershey's chocolate bar

1900-1910—George Washington Carver finds new uses for peanuts, sweet potatoes, and soybeans

1901—A&P incorporates with 200 stores (in 1912, expands with cash and carry format)

1903—Dole canned pineapple

1903—Kellogg adds sugar to corn flakes, boosting popularity

1903—Pepsi Cola

1904—Quaker markets first puffed cereal

1906—Pure Food and Drug Act prohibits food adulteration and misbranding

1906—Meat Inspection Act requires Federal inspection of slaughterhouses

1910's

1910—Double-cripped can reduces costs for processors

1910—Aunt Jemima Pancake Flour

1911—First vitamin, vitamin B1, discovered

1912—Oreos

1912—Hellman's mayonnaise

1914—USDA establishes National Extension Service, which employed home economists

1914-18—World War I

1916—USDA prints its first food guide: *Food for Young Children*

1916—Piggly Wiggly opens first self-service food store

1917—Food Administration under Herbert Hoover conserves food for war effort

1920's

1920—Charles Birdseye deep-freezes food

1921—White Castle chain of hamburger shops opens



1923—Welsh's grape jelly

1925—First home mechanical refrigerator, Frigidaire, sold

1926—General Mills creates "Betty Crocker," symbolizing growing importance of advertising

1928—Peter Pan Peanut Butter

1928—Velveeta

1929—Great Depression begins with stock market crash

1930's

1930—Vitamins synthesized in the laboratory

1930—Wonder Bread markets first automatically sliced bread

1932—Fritos corn chips



1933-40—New Deal legislation, Great Depression relief and reform

1935—Howard Johnsons begins as franchised restaurant

1935—Rural Electrification Administration extends electricity to countryside

1937—Kraft Macaroni and Cheese Dinner

1937—Spam

1937—McDonald brothers open first drive-in

1940's

1941—National Victory Garden Program launched

1941—Recommended Daily Allowances published

1943—Bread flour fortified with vitamin B1

1942-46—Food price controls and food rationing during World War II

1942—Dannon yogurt

1942—La Choy canned Chinese foods

1946—National School Lunch Act requires school-provided meals to be nutritionally balanced and have minimum amounts of specific food groups

1946—Maxwell House instant coffee

A Sampling of Innovations, Laws, and Product Introductions¹ in the U.S. Food Industry

1950's

1950-56—Korean War and postwar readjustment

1951—Swanson produces first frozen meals, pot pies

1952—Campbell's cookbook, *Cooking With Condensed Soup*, greatly expands use of soups in casseroles, a characteristic dish of the era

1954—Swanson makes first frozen TV dinner

1954—Ray Kroc buys McDonalds, starts building national chain

1954—Butterball turkey

1956—USDA publishes "Basic Four" food guide

1958—Delaney Clause added to The Pure Food and Drug Act, banned food additives shown to cause cancer in laboratory animals

1958—Rice-a-Roni

1960's

1961-75—U.S. involvement in Vietnam

1963—Julia Child's "The French Chef" debuts on television

1964—Carnation Instant Breakfast

1964—Food Stamp Act establishes a national food stamp program

1965—Cool Whip

1965—Shake 'n' Bake

1966—Child Nutrition Act begins the school breakfast program

1969, 1971—White House Conferences on Food, Nutrition and Health

1970's

1970—Hamburger Helper

1970—Quaker Oats 100% Natural granola

1972—Snapple fruit juices

1973—Voluntary nutrition labeling appears on food packages

1973—McDonald's introduces Egg McMuffin

1974—Special Supplemental Food Program for Women, Infants, and Children (WIC) begins

1976—Perrier

1977—U.S. Senate Committee releases *Dietary Goals for the United States*

1980's

1980, 1985—USDA and DHHS publish *Dietary Guidelines for Americans*

1981—Stouffer's Lean Cuisine frozen dinners

1982—*Diet, Nutrition and Cancer* published by National Cancer Institute

1982—Bud Light

1985—Aspartame, a low-calorie intensive sweetener, approved

1986—Pop Secret Microwave Popcorn

1987—Campbell's Special Request soups

1989—Berlin Wall falls



1990's

1990's—Stock market hits historic highs, longest peacetime expansion

1990—USDA and DHHS publish third edition of Dietary Guidelines

1990—Nutrition Education and Labeling Act makes nutrition labeling mandatory

1991—Stouffer's Homestyle entrees

1992—USDA/DHHS release "Food Guide Pyramid"



1993—SnackWell's cookies and crackers

Mid-1990's—USDA modernizes its meat and poultry inspection programs in response to food safety concerns

1998—Frito-Lay Wow! chips (made with the fat substitute, olestra)

1998—47 percent of U.S. food dollar is spent away from home

¹ Product introductions from *Bon Appetit* magazine, September 1999.

America's Fascination With Nutrition

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American ideas about nutrition and health are rooted in centuries of western scientific and philosophical thought. When European settlers arrived in the New World they encountered a vast and potentially bounteous terrain. Faced with these conditions, they gradually began to modify the way they thought about food and its effects on human life and well-being.

As historian Harvey Levenstein has made clear in two pioneering books, Americans have long been fascinated with nutrition and, because of that, have produced a fascinating nutritional history, replete with interesting, visionary, and eccentric characters. Some writers, such as Julia Child, wish that we could be more relaxed about food and eat in a sociable and enjoyable European style, but historical forces shape eating and nutrition just as they do politics and economics and cannot be overturned by wish or fiat. Americans have had to fight a unique battle of food abundance in which American optimism, faith in science, willingness to experiment, and a bit of zaniness all have played a part.

European and American Experiences Contrasted

By the end of the 11th century in Europe, when food had become more abundant after the chaos of the "Dark Ages," people began to believe that eating well could lengthen life. The most famous medical diet of that time was the *Regimen Santitatis Salernitanum*, a product of the medical school in Salerno, Italy. Consistent with the medieval theory of bodily humors, which in turn was based on the Greek ideas of Hippocrates as transmitted through Arab commentaries, the *Regimen* recommended that food be balanced with character dispositions. Thus, hot-blooded men were advised not to eat spices or onions. The *Regimen* circulated for many centuries in Europe, but fortunately most people did not follow its unbalanced recommendations or mortality rates would have been much higher than they actually were.

Europeans, although they discovered many of the basic concepts of nutrition such as calorie, protein, fat, and carbohydrate, generally have not ruminated much about eating for health and, with one pronounced exception (see box), have been more inclined to eat for enjoyment and sociability. In recent years, however, globalization and the advent of genetically and hormon-

ally modified food have caused Europeans to examine more carefully the safety and nutritive value of their food supply.

Concern with food and nutrition in the United States certainly has been more long-standing and consistent than in Europe, with many Americans seeing food as the royal road to health, sanity, longevity, and more. In the words of Charles Tart, a psychologist at the University of California (Davis), "Americans . . . have the delusion that we can eat our way to enlightenment. Just a pure enough diet." No other country has had our variegated history of nutritional theories, diets, food fads, and, more recently, eating disorders.

There are several reasons for this peculiar American relationship to food and nutrition. The abundance of our food supply, which has always been reflected in our low food prices, has been both an opportunity and a difficulty. On the positive side, starvation and malnutrition have never been major problems in America. In the days when the overwhelming majority of people engaged in hard physical labor, Americans, fortified by the largest intake of meat and protein in the world, were taller and more physically robust than citizens of most other countries. But when Americans became more urbanized and sedentary, food abundance

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became problematic, requiring us to find ways to limit and modify our consumption. On the other hand, countries without our food bounty have not been forced to curb their appetites as we have. Consumption flows more naturally from tradition and availability than from a need to constrain.

The United States was also the first continental market where food products could be shipped hundreds and then thousands of miles without barrier. Market unification greatly enhanced specialization and productivity. It also led in the 20th century to economic conglomeration, standardization, mass marketing, and the addition of chemicals to the food supply in the form of synthetic fertilizers, herbicides, additives, and preservatives. Consequently, Americans sometimes have felt further removed from the sources of their food supply than citizens of other countries. With alienation came concern and anxiety.

Finally, Americans' abiding interest in nutrition is linked to our frontier-honed ethos of self-improvement, perfectibility, optimism, and faith in the power of science to solve problems. Of course, many Americans, perhaps a majority, have little concern about nutrition but the national tone is set by those who do.

It is also interesting to note that upsurges in popular interest in nutrition often have coincided with times of political reform and change: Grahamite vegetarianism during the Jacksonian "reform era" of the 1830's; the "New Nutrition" of the 1890's and early 1900's paralleling Progressivism's emphasis on governmental and industrial reform; and the Organic-Natural-Holistic movement of the late 1960's and early 1970's as part of the counter-cultural, antiwar, and ecological ferment of that period. Today, an active concern about food safety and nutrition has become thoroughly and, perhaps, permanently embedded in American society.

Graham Sounds the Alarm

In the 18th century, food was produced and consumed almost entirely within very local areas. By the early 19th century, the industrial revolution was beginning to affect what and how Americans ate, especially in the growing cities. Canal barges, wagon roads, and railroads (beginning in 1829) took products longer distances. Bread, once all dark and heavy, was being bolted (processed) to remove some of the bran and lighten its color and weight. Sylvester Graham (the eponymous inspiration of the Graham Cracker) was one of the first to inveigh against some of the effects of industrialism.

Born in 1797, Sylvester Graham was a sickly 17th son who grew up to be a temperance minister. By 1830, he had turned his attention to food, claiming that gluttony rather than hunger was the greatest dietary evil afflicting humankind. Though he never acknowledged his influences, he was inspired by the vitalist theories of the Frenchman Francois J.V. Broussais, who believed that fibers in the stomach and intestines could be overstimulated and that negative impulses could then be transferred via the nerves to other

parts of the body. According to Graham, the vital economy of the body involved a system of waste and repair of the vital force. A healthy diet allowed a balance to be struck between loss in the digestive process and renewal from the energy in the ingested food. Excessive eating could upset this balance as could meat, alcohol, and sex. Thus, he advocated vegetarianism, temperance, and sexual continence.

Experiments in the late 1990's suggesting that well-fed mice experience DNA damage that slows tissue repair and speeds up aging may soon give a modern, genetic cast to Graham's ideas. Graham was certainly a strange man for his time or even ours, but he was also something of a visionary, who anticipated in broad outline several important ideas in modern nutrition.

There was also a strong strain of religious romanticism (some might call it Puritanism) in Graham's thought that has appeared throughout the history of Americans' attitudes towards food. Graham knew nothing about vitamins, but in bolted bread he found a symptom of humanity's falling away from divine and natural laws, which he believed were the same. Over a 100 years later, counterculturists of the 1960's would also place great emphasis on

German Advances in Environmental and Nutritional Sciences

In the 1930's and early 1940's, German scientists and medical researchers established epidemiological links between cancer, smoking (including "passive" smoking leading to the creation of smokeless offices and restaurants in many German cities beginning in 1938), asbestos, radon, and other environmental pollutants. They warned against excessive meat consumption, food additives, and preservatives, and promoted the healthful

values of fibers, fruits, and vegetables.

Germans were encouraged to become healthy not for personal reasons, but so they could be useful to the National Socialist state. After Germany's defeat in World War II, this research, which was several decades ahead of the rest of the world, ceased and was then forgotten. Its history was resurrected in 1999 by Pennsylvania State University historian Robert Proctor.

natural bread and "naturalness" in general without, however, carrying over his ascetic attitudes towards the pleasures of table and bed.

Graham achieved prominence from his lectures in 1831 when cholera, accompanied by severe gastrointestinal symptoms, made its first appearance in the United States. His lectures in Boston and New York were well attended by both acolytes and hecklers. The latter scorned his self-denying program with its apparent equation of food with death.

Grahamism flourished in the 1830's and 1840's and converted, at least temporarily, such people as Henry David Thoreau, fiery revivalist preacher Charles Finney, and Joseph Smith, founder of the Mormon Church. Various utopian socialist communities, forerunners of the 1960's organic commune movement, adopted some of his ideas and a few of his followers set up the world's first health food store to sell unbolted "Graham flour," several decades before the appearance of the famous crackers.

When Graham died in 1852, the movement was on the wane. In Germany, however, the chemist Justus von Liebig was separating food into its component proteins, fats, and carbohydrates, thus laying the foundation for the modern study of nutrition. Forty years later, the United States would be the first country to carry a message of nutrition to its general population.

New Nutritionists Preach to the Working Class. . .

After the Civil War, Grahamism was all but forgotten as the newly rich "Robber Barons" and the upper middle classes indulged on a grand scale. Everything was consumed conspicuously, including food. This was the era of "groaning" tables served from kitchens amply staffed with servant labor. Corpulence in men was not frowned on but was

considered a sign of success and well-being. Physicians wrote books for women instructing them on *How to Be Plump* so that they could achieve a state of "florid plumpness." On the other hand, millions of new immigrants were paid factory wages that barely provided enough for basic needs.

W.O. Atwater, a professor at Wesleyan University and the first director of the U.S. Department of Agriculture's (USDA) Office of Experiment Stations in 1888, was the father of modern American nutrition. He built on the work of the pioneering German chemists and in the 1880's started publishing his tabulations of the fat, protein, and carbohydrate content of various foods.

The administrators of his Methodist university thought his work lacked significance and urged him to make it more relevant to contemporary social issues such as the poor living conditions of the working class and labor unrest. Having broken down food into its constituents, he realized that in terms of proteins, which were essential for performing work, meat and beans were roughly equivalent. Workers in the 1890's spent 50 to 60 percent of their wages on food, and if they could be persuaded to cut back their consumption of meat especially and substitute beans and other cheaper sources of protein, they could save money, live a little better, and be integrated more prosperously and peacefully into the new industrial economy.

Atwater was helped in this effort by Boston businessman Edward Atkinson, who invented the slow-cooking "Aladdin Oven" in the late 1880's, and by two early women scientists, Mary Hinman Abel and Ellen H. Richards, who founded the "New England Kitchen" in Boston in 1889. Establishing the basis for a new profession of "home economics," Abel and Richards, who used an "Aladdin Oven" and received help and encouragement from

Atkinson, constructed practical menus containing, among other things, bean and lentil substitutes for meat. Their attempts to disseminate them among the working classes were unavailing. Immigrant workers wanted to Americanize, and that meant, among other things, eating meat and not a lot of beans, which were associated with the poor people's diets of the Old World.

The advocates of the "New Nutrition," so-called by Levenstein, also did not understand the nutritional value of foods such as eastern and southern European stews and pastas because they mistakenly believed that foods were assimilated much more completely when they were eaten separately and not all mixed up in one dish. The New Nutritionists of the 1890's also did not know about vitamins and thus recommended that workers cut back on



W.O. Atwater, the first director of USDA's Office of Experiment Stations in 1888, was the father of modern American nutrition; in the 1880's, he began publishing the fat, protein, and carbohydrate content of various foods.

Credit: Agricultural Research Service, USDA

fruits and many vegetables, especially popular among Italian immigrants, because they were not protein rich and thus not suited for strenuous industrial labor. According to Levenstein, New Nutritionism was a program of social reform that was based on incomplete knowledge that, at least as it was applied to factory workers, dismissed generations of nutritional wisdom embodied in immigrant diets. Fortunately for the workers and the future of a diverse American cuisine, New Nutritionism's recommendations were ignored.

. . . But Reach the Middle Class

The New Nutritionists did, however, find a receptive audience among the middle classes searching for relief from "dyspepsia," a term that subsumed a variety of gastrointestinal ailments that had been on the rise in the last decades of the 19th century. It also responded to the servant crisis of those same years. It was becoming more difficult to employ immigrant girls as house servants, and middle-class families were finding it harder to keep up with the upper classes by maintaining lavish styles of dining and entertaining. New Nutritionism, with its message of simpler and smaller, gave middle-class families license to get off the social merry-go-round.

Middle-class housewives began to learn the vocabulary of protein, fat, and carbohydrate and that some foods with more calories could make them "plumper," a condition that was no longer so esteemed by the turn of the century. In the next decade, the ideal of the "plump" woman would be supplanted by the much slimmer "Gibson Girl" and then by the waistless "Flapper" of the 1920's. Men's body ideal also began to change. The 330-pound William Howard Taft (President from 1909 to 1913) was the last "fat"

man to occupy the White House. He was succeeded by Woodrow Wilson, the gauntest President since Abraham Lincoln. No future President would require, like Taft, a special tub in which to bathe.

This was also the era of Dr. John Harvey Kellogg, who with his brother, William, invented "Corn Flakes," which changed American breakfast habits by substituting grains for meat. For the most part, his ideas were warmed-over Grahamisms but he particularly fixated on the terminus of the digestive system, blaming many illnesses on the proliferation of bacteria in the colon, called "auto-intoxication" by Kellogg.

The most extreme solution to the problem of "auto-intoxication" came from Horace Fletcher, a wealthy American businessman retired in style in a 13th-century palazzo on Venice's Grand Canal. Fletcher advocated a drastic reduction of food intake by "thorough mastication," which required silently chewing each mouthful at least 100 times.

So that they might be funded by him, researchers pretended to take seriously Fletcher's theory that an unknown mechanism at the back of the mouth actually ingested food. They were impressed, however, that his feces, which he sent to them through the mails, were tiny and odorless, thus demonstrating the apparent absence of "auto-intoxication." They were also amazed that the 53-year-old Fletcher could physically outperform most 21-year-old athletes on half to two-thirds of their protein intake. "Fletcherism" as a fad soon died out, but he had convinced many nutritional scientists that eating less food and protein was, indeed, beneficial, as claimed by the proponents of New Nutritionism.

New Nutritionists received their biggest boost from World War I. The drive to voluntarily conserve beef and wheat by substituting beans and other grains was very effec-

tively led by Herbert Hoover. Using advertising techniques and personnel, his agency, the Food Administration, convinced many Americans to simplify their diets.

Newer Nutritionists Discover Vitamins

Most human vitamins were discovered during the 1910's and 1920's, ushering in the era called the "Newer Nutrition" by historians. These discoveries meant that fruits and many vegetables once considered relatively unnecessary were now very important and that milk, formerly children's food only, could, when enriched with vitamin D, become an adult drink as well.

Vitamins were a boon to food companies seeking ways to differentiate their products from those of competitors. Cereals, bread, milk, and other products all claimed to be vitamin enriched (with liquids or powders) and until the laboratory synthesis of vitamins permitted their incorporation in pills in the late 1930's, enriched food was the only way to get extra vitamins. Vitamin enrichment by food producers was, however, also a tacit admission that their food needed enriching because it had lost vitamins during processing, but by this time, many nutritionists and home economists worked either directly or indirectly for food companies and did not call attention to these facts.

During the late 1930's, many people were gripped by "vitamin mania," which did not return again in such force until the early 1970's. At the end of the 1930's, the medical profession, joined by food producers, combated the new mania for pills, believing that people would unwisely conclude that they could self-medicate, thus touching off a battle over the efficacy of dietary supplements that continues today.

As World War II loomed in Europe, some critics, in a manner reminiscent of Sylvester Graham,

began to complain about the vitamin deficiencies of processed food, particularly bread, and they linked such food to the dismal health status of many new military recruits. In 1940 and 1941, physicians at Mayo Clinic found that teenagers placed on a diet low in thiamine (vitamin B1) became surly and uncooperative. As a result, the Federal Government had millers restore thiamine (dubbed the "morale vitamin") into bread flour. In 1941, the Federal Government established the first Recommended Daily Allowances (RDA's) for important nutrients and created the concept of seven basic food groups (reduced to four in 1956). However, when the war began, the concern over vitamins dissipated, and Americans spent most of their time negotiating through and around the maze of rationing regulations.

The late 1940's and 1950's were relatively "silent" years for nutrition as well as for politics. After winning the war, there was much celebration about America being "the best fed nation on earth." These were also the "golden" years for food chemistry, with hundreds of additives and preservatives coming onto the market. These innovations were applauded by both experts and a general public looking for convenience. Only the 1958 Delaney Amendments to the Pure Food and Drug Act, requiring the Food and Drug Administration (FDA) to test new additives for safety, marked a departure from this trend of nutritional complacency.

'Harmful' Foods Fall Under Suspicion

The discovery in 1959 that eating polyunsaturated fats might lower serum cholesterol and further evidence in 1961 linking cholesterol with arteriosclerosis brought an end to the quiet years. Reports about cholesterol and heart disease had appeared in the 1950's but had been

ignored. This time, they reached the general public, and some food producers, realizing the potential for a new marketing strategy, began to offer products that they claimed were "low" in cholesterol. By 1962, almost one-fourth of American families told survey takers that they had changed their diets as a result of the cholesterol scare.

With the exception of metabolic diseases such as diabetes, this was the first time that American science had linked a specific food element to a specific disease. It was also the opening round of what might be called the campaign for the Selective Nutrition—that is, not just limiting intake (New Nutrition) or eating vitamin-enriched foods (Newer Nutrition) but reducing drastically the intake of foods with specific "harmful" elements and thus negating their effects. It was also a blow to the concepts of balanced diet and "four basic food groups," for here was a harmful element (cholesterol) that was strongly associated with one of the basic groups (milk products). A few years later, meat products, another basic food group, would come under suspicion because of the presence of saturated fats, another contributor to heart disease. Eventually general concern over fat, saturated fat, and cholesterol in the diet led USDA in 1992 to replace the food groups with the Food Guide Pyramid.

Rachel Carson's *Silent Spring*, published in 1962, contained evidence that the insecticide DDT was killing bird populations. Although Carson's book initially affected the public's awareness of wildlife species and led to the banning of DDT, it eventually helped stir concern about the possibility of synthetic chemicals reaching humans through the food chain and about food chemicals in general. Three years later, Ralph Nader, a young lawyer, published *Unsafe at Any Speed*, launching the modern consumer movement. By the early

1970's, Nader and his youthful Raiders were investigating many aspects of corporate America. Chemical food additives and preservatives with their cancer-causing potential came under their repeated scrutiny.

Executive Branch agencies in the Federal Government, reluctant to antagonize agricultural and producer groups, were quiet throughout the 1960's and 1970's. Independent organizations, such as the Heart Association and the National Cancer Institute, were much more active and funded many studies on food additives and ingredients.

Another effect of the Selective Nutrition campaign was the revival of the dormant appetite for vitamins. Faced with conflicting opinions about what to eat and what to avoid, Americans responded by taking more vitamins as insurance against uncertainty. According to a study by National Analysts, Inc., by 1969, over 50 percent of Americans were taking vitamin pills and some were beginning to take mega-vitamin supplements spurred on by claims that vitamin C could prevent or palliate a variety of illnesses and that vitamin E could enhance vitality and sexual performance. FDA attempted to exercise regulatory control over vitamins, but in 1973, Congress, after having received more letters favorable to vitamins than about the ongoing Watergate investigation, passed the so-called Vitamin Amendments to the Pure Food and Drug Act, which severely curtailed FDA's power over vitamin regulation.

Sixties' Hippies Stir the Pot

Paralleling and influencing Selective Nutritionism was the counter-cultural organic farming movement. Since the 1950's, J.I. Rodale had published *Organic Gardening and Farming*, the only source of information on the subject. When his ideas and those of other health food advo-

cates met those of the so-called psychedelic "hippies," the countercultural organic commune was born.

Motivated by ecological and anti-war concerns, this movement's goals transcended individual health. It saw growing food organically, without synthetic chemicals, as a new way of relating to the earth as a whole—part of the ideal of "treading lightly on the land," as formulated by poet-guru of the movement and former Beat Generation bard Gary Synder. Organic whole-grain bread was especially symbolic for the organic communards, as it had been for the Grahamite utopian communities of the 1840's, while "white bread" became an epithet for everything they considered immoral, exploitative, and unnatural.

By the mid-1970's, communal organic farming was declining (individual organic farming was on the rise) but its emphasis on "natural" food had influenced the broader society by stimulating food companies to claim more "natural" ingredients in their products and by creating a market for "natural" supermarkets and speciality stores.

Nutrition Goes Mainstream

By 1977, when the Senate Nutrition Committee issued its *Dietary Goals for the United States*, the Selective Nutrition agenda was becoming national policy. Calling obesity a "national evil," the Committee's report urged Americans to cut back on cholesterol, saturated fat, salt, and sugar. Its tone was so strong that, according to Levenstein, "even vegetarians and natural foods buffs would have to make dietary adjustments."

In 1980, Federal agencies became more active when USDA and the Department of Health and Human Services jointly issued their *Dietary Guidelines for Americans*, which was based on the Senate's *Dietary Goals for the United States* and the 1979 *Surgeon General's Report on Health Promotion and Disease Prevention*. Two years later, the National Cancer Institute published *Diet, Nutrition and Cancer*, which expanded on the recommendations in the *Goals and Guidelines*, but added warnings about salt curing (including salt pickling), smoking, and nitrite curing. According to nutrition writer and biologist Elaine McIntosh, the 1980's was a period of "tremendous growth in the prominence of nutrition and dietetics. The word 'nutrition' was launched into the headlines more than in any previous decade." Food companies took their cue from nutrition's mainstreaming and introduced more and more products that claimed to have less fat, fewer calories, and lower cholesterol, while at the same time providing more nutritional values such as fiber, vitamins, and minerals.

Selective Nutritionism remained the reigning paradigm in the 1990's but in recent years has acquired a slightly different accent. Researchers are now discovering more foods and drinks that may have very specific beneficial effects (for example, tomatoes, foods with calcium, and red wine protecting against prostate cancer, colon cancer, and heart disease, respectively), and popular articles tout the benefits of "Ten Foods to Lengthen Your Life." Research on animal genetics and nutrition is making fascinating connections between food and aging. In the relatively near future, this research could have practical applications for

humans. Or perhaps neuroscientists will have something to offer by unlocking the secret of the so-called "gourmand syndrome," in which certain patients with injured right frontal lobes of the brain suddenly acquire an overriding taste for fine food. In the meantime, we may continue to discover more foods that can possibly protect against specific diseases or slow the aging process and thereby allow Americans to eat more enjoyably and with less guilt and anxiety.

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Food Spending Varies Across the United States

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Food helps to define the culture and identity of many nations. Diets have been shaped over hundreds or even thousands of years by the local culture, climate, and the plants and animals available in particular countries or regions of the world. French, Mexican, Italian, and Chinese foods evolved independently and are easily identified by their unique characteristics. Since the United States is relatively young and comprised almost entirely of immigrants, the American food genre is comparably nondescript. To the outside world, fast food and soft drinks might best characterize the U.S. diet. However, the diversity that characterizes our population is also reflected in our food consumption patterns, which are both dynamic over time and heterogeneous across regions.

Food consumption patterns within the United States vary in part because of ancestral patterns of land settlement. For example, the Southern diet has been heavily influenced by African-American and French traditions, diets in the Southwest often have a strong Mexican flair, and food consumption patterns in certain parts of the Northeast and

upper Midwest draw on Eastern European traditions.

Income is also an important factor in determining the types of foods consumed. This is certainly recognized when comparing diets across different countries. Even within the United States, income variation across regions can translate into noticeable differences in diet.

States Differ in Spending on Food Both at Home and Away

That U.S. diets vary regionally becomes immediately apparent when comparing the level of per capita food expenditures across States. Based on the most recent State-level data from the U.S. Census of Retail Trade (1992; corresponding data from the 1997 Census is scheduled to be released in the second quarter of 2000), per capita expenditures on food purchased from supermarkets and other grocery retailers (food at home) averaged about \$1,526 a year, while expenditures at restaurants and at fast food outlets (food away from home) were \$348 and \$316, respectively, for a total of \$2,190.

But there are large deviations from these averages. In the continental United States, residents in New Hampshire spent the most for food. Their 1992 expenditures on food at home equaled \$2,171 per

capita, with an additional \$458 spent at restaurants and another \$254 at fast food outlets, bringing the total to \$2,883—about 32 percent above the U.S. average. At the other extreme, Mississippi residents spent a combined total of only \$1,750 per capita in 1992: \$1,330 on food at home, and \$143 and \$277 at restaurants and fast food outlets, respectively. The residents of Mississippi spent about 9 percent more on fast food than did New Hampshire residents, while expenditures at table-service restaurants—which are often associated with high incomes—were almost 78 percent higher in New Hampshire than in Mississippi.

Income growth is often cited as a key factor in explaining dietary changes over time. Studies have shown that as incomes increase, consumers increase their expenditures on more expensive fresh foods, more processed food, and more meals eaten out. The same effect is evident across regions at a single point in time. In 1992, per capita income in New Hampshire was more than 65 percent higher than in Mississippi, and the much higher expenditures at restaurants likely reflect this difference. For many consumers, fast food is viewed more as a necessity than a luxury, hence the lower expenditures in high-income New Hampshire.

Income also affects the types of foods purchased from grocery

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stores. In developed nations like the United States, the total quantity of food consumed is unlikely to increase appreciably with income. Therefore, the above-average expenditures on food at home in a high-income State like New Hampshire almost certainly reflect purchases of more expensive foods—fresh tuna versus canned, T-bone steak versus hamburger, and imported natural cheese versus Cheese-Whiz, perhaps.

Factors such as differences in culture and climate serve to create regional differences that can span State boundaries. Thus, the South is

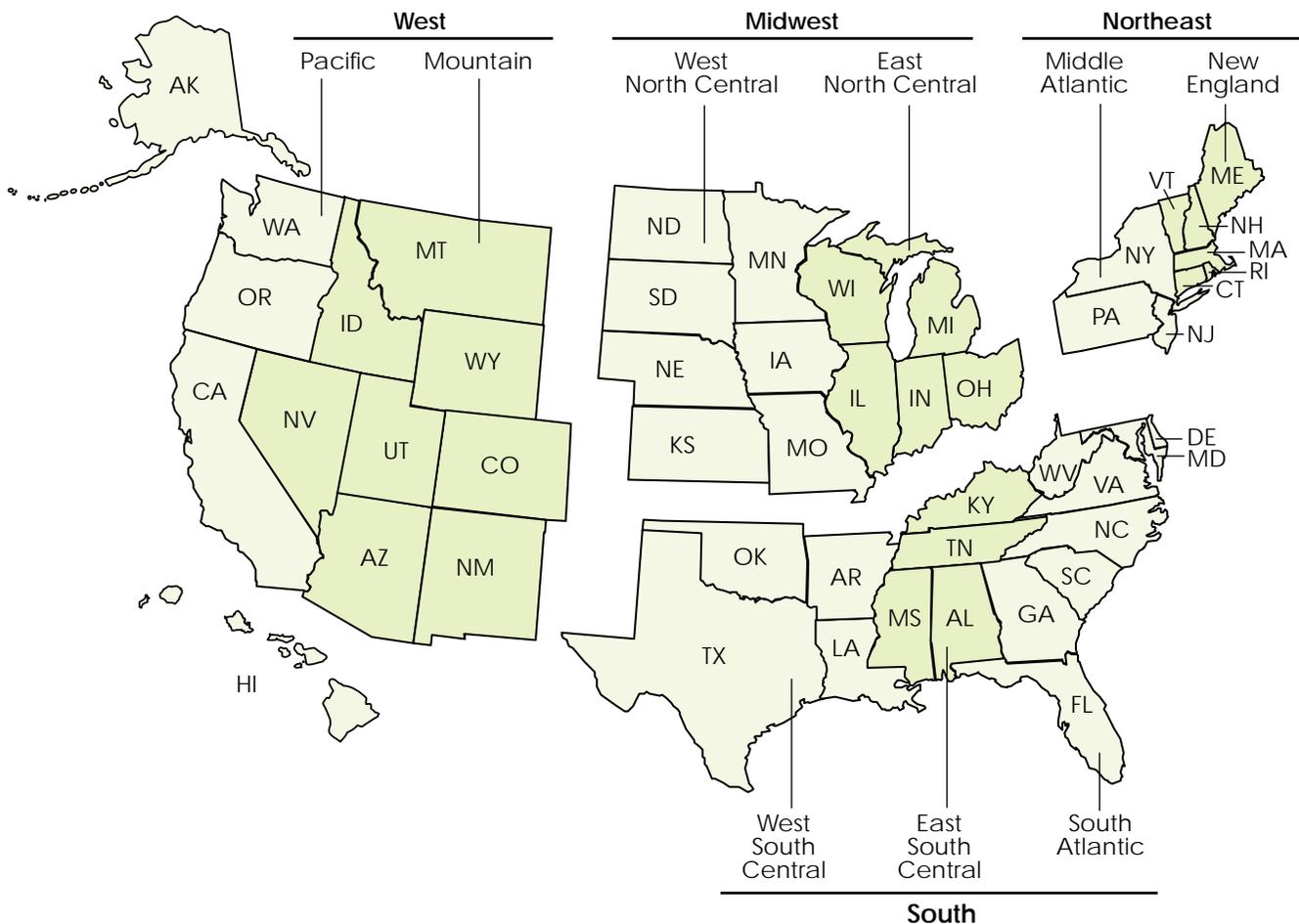
often identified as a unique U.S. region, as is the West Coast or New England. The U.S. Census Department divides the United States into nine geographic divisions, which can be further aggregated into four regions: Northeast, Midwest, South, and West (fig. 1). These broad regions display differences in food expenditure patterns.

The Midwest appears to be the most frugal when it comes to food expenditures (table 1). Consumers in this region spend about 12 percent less on food at home than the U.S. average, and almost \$100 per capita below consumers living in

the South, the region with the next lowest food expenditures. Midwest consumers also economize on food away from home, with restaurant expenditures among the lowest in the Nation and fast food expenditures below the U.S. average. Only the Northeast spends less on fast food. Incomes in the Midwest are only slightly below the U.S. average, which emphasizes that income is only one of possibly many factors that affect expenditures.

Consumers in the Northeast and the West spend similar amounts on food at home, with spending in both about equally above the U.S.

Figure 1
Map of the United States Showing Census Divisions and Regions



Source: U.S. Bureau of the Census.

average. However, spending in the Northeast varies substantially; New England residents spend nearly 14 percent more on food at home than do residents of the Middle Atlantic States. In the West, the difference in expenditures between the Pacific and Mountain divisions is only about 3.5 percent. The Midwest and South also exhibit little within-region variation in food-at-home expenditures.

In terms of food away from home, the West leads the Nation in expenditures, driven by high restaurant and fast food expenditures in the Pacific division. Restaurant expenditures in New England are second only to the Pacific, while New England's fast food spending is the lowest in the United States. The highest fast food expenditures are found across the Southern divisions, but expenditures in the Pacific and East North Central divisions also exceed the U.S. average.

New England's relatively low fast food expenditures might indicate

that fast food firms target lower income areas for expansion (per capita income in New England is about 16 percent above the national average). Another possible explanation is the propensity for consumers to travel by automobile. Fast food, with its heavy emphasis on take-out sales—often sold through drive-through windows, and the frequent placement of fast food outlets along highways—is clearly targeted towards the automobile user.

According to the Federal Highway Administration, in 1995, annual miles of vehicle travel per capita in the 6 New England States averaged 8,439, somewhat below the national average of 9,202. In the South Atlantic, where fast food sales are the highest, vehicle miles traveled were 10,149 per capita.

Grocery Purchases Vary by Region

The largest variation in food expenditures across regions involves

food at home. We used 1990 retail sales data for branded grocery products in 54 separate U.S. markets to examine how the relative expenditures on various grocery items vary across U.S. regions. For ease of presentation, we aggregate these 54 markets into the four aggregate regions defined by the Census: the Northeast, Midwest, South, and West. We focus on grocery categories with over \$100 million in sales. The data do not cover fresh products such as produce and meats, but only include packaged grocery items (branded and store brands) sold through central warehouses.

The numbers in table 2 report the 10 grocery categories that have the highest sales in each region relative to the national average, reported as a percentage. For instance, sales of iced tea mixes in the Northeast are 2.06 times higher than the U.S. average for this category. Clearly, sales of certain grocery items vary considerably by region. The South stands

Table 1
Average Food Expenditures Vary With Income and Across Regions, 1992

Region	Expenditures				Per capita income
	Food at home	Restaurant	Fast food	Total ¹	
<i>Dollars per capita</i>					
U.S. average	1,526	348	316	2,190	20,137
Northeast	1,697	391	248	2,336	23,417
New England	1,783	417	243	2,443	23,398
Middle Atlantic	1,569	350	257	2,176	23,424
Midwest	1,340	306	309	1,955	19,626
East North Central	1,324	317	323	1,964	19,834
West North Central	1,351	298	300	1,949	19,133
South	1,437	304	343	2,084	18,343
South Atlantic	1,466	381	349	2,196	19,465
East South Central	1,402	220	348	1,970	16,447
West South Central	1,412	235	327	1,974	17,575
West	1,622	375	322	2,319	20,525
Mountain	1,637	358	318	2,313	18,891
Pacific	1,580	422	331	2,333	21,381

¹Total of food at home, restaurant, and fast food only. Excludes hotels/motels, concessions stands, military feeding, and other minor categories.

Source: Census of Retail Trade.

out as a region where purchases of processed meats, cornmeal, and shortening are much higher than the U.S. average. The West exhibits above-average grocery purchases of many fruit juices and Mexican foods, the latter reflecting the large Mexican-American population. Midwest consumers purchase above-average quantities of many items used for baking, such as pie filling, baking chocolate, brown sugar, and marshmallows. This suggests an above-average tendency for home cooking, which is consistent with the data that report lower overall food expenditures in this region (table 1).

The Northeast is the region with the highest income. Many of the items with above-average purchases in this region could be labeled as discretionary, such as chewing gum, seltzers, and butter (as opposed to margarine, which tends to be much



Since the United States is relatively young and is composed of many types of immigrants, no overarching American food genre exists. Americans' diets vary across the country, often based on prominent local ethnicities. In the Southwest, for example, many foods are heavily influenced by Mexican favorites.

Credit: PhotoDisc

Table 2
Regional Differences Show Up in Grocery Sales

Region and item	Household expenditures relative to the U.S. average	Region and item	Household expenditures relative to the U.S. average
Northeast:	<i>Percent</i>	West:	<i>Percent</i>
Iced tea mixes	206	Ripe olives	223
Frozen meat	199	Frozen apple juice	215
Chewing gum	165	Frozen Mexican dinners	211
Butter	164	Refrigerated Mexican foods	211
Shelf-stable blended juice	157	Canned chilli	203
Frozen green beans	156	Peppers (pickled)	199
Seltzers/club soda	155	Frozen lemon aid	195
Frozen dinner bread/rolls	155	Frozen grape juice	193
Miscellaneous frozen dishes	154	Miscellaneous frozen juices	188
Canned ham and meats	153	Nonchocolate candy bars	184
South:	<i>Percent</i>	Midwest:	<i>Percent</i>
Cornmeal	248	Shelf-stable tomato juice	166
Canned sausage	243	Spoonable salad dressings	164
Refrigerated biscuits	232	Canned pie filling	148
Southern-style frozen vegetables	224	Baking chocolate	145
Solid shortening	169	Potato chips	142
Shelf-stable orange juice	164	Brown sugar	138
Breakfast sausage	164	Frozen hors d'oeuvres	137
Dinner sausage	160	Marshmallows	136
Canned peas	158	Canned mushrooms	134
Frozen pastry	154	Refrigerated Mexican foods	131

Source: Compiled from data collected by Selling Area Marketing Incorporated (SAMI), 1990.

less expensive). Many frozen dishes are also consumed in above-average quantities in this region. Together, this suggests that higher average incomes lead to greater purchases of discretionary items and convenience foods.

Income Affects the Type of Grocery Purchases...

Incomes vary significantly in the 54 regional markets for which grocery sales are reported. Making use of this fact, we can examine how grocery expenditures in the high-income markets differ from those in the low-income markets, independent of regional effects. A nationally representative “snapshot” of expenditures in low-income markets is developed by averaging the expenditure patterns of the lowest income cities in each of the four regions.

These four low-income cities are Scranton, Pennsylvania; Charleston, West Virginia (a market that includes much of Ohio); Shreveport, Louisiana; and El Paso, Texas, from the Northeast, Midwest, South, and West, respectively. The same technique provides a snapshot of expenditures in high-income markets. Here, the four high-income cities (one from each region) that are averaged are New York City, New York; Chicago, Illinois; Miami, Florida; and San Francisco, California.

To investigate how expenditure patterns differ between these representative high-income and low-income markets, an expenditure index is developed for each that reports how the sales of particular grocery categories for the two types of markets compare to the national average. Thus, we have one index for low-income markets and another

for high-income markets for each grocery category. These indices are interpreted in the same manner as the numbers in table 2—that is, as the percentage difference from the U.S. average. Again, we focus on grocery categories with over \$100 million in U.S. sales.

We find that grocery categories that are relatively important in high-income areas tend to be relatively unimportant in low-income markets, and vice-versa. The expenditure indices further reveal information about how expenditure patterns differ in high-income and low-income markets (table 3). To simplify our presentation, we focus on the 10 grocery categories that have the highest expenditure indices and the 10 with the lowest, in the high-income and the low-income markets.

The items in table 3 adhere to a pattern suggesting that income

Table 3
Expenditures on Many Grocery Products in High- and Low-Income Cities Vary From the U.S. Average

Items with above-average household expenditures relative to the U.S. average		Items with below-average household expenditures relative to the U.S. average	
Low-income cities ¹	Percent	Low-income cities ¹	Percent
Cornmeal*	242	Seltzers/club soda*	34
Canned sausage	192	Refrigerated salad dressing*	38
Solid shortening*	175	Bottled water*	41
Canned lunch meat	162	Miscellaneous refrigerated juices*	43
Flour	155	Deluxe frozen vegetables	44
Ground pepper	141	Frozen green beans*	47
Evaporated condensed milk	138	Frozen fish dishes	48
Refrigerated biscuits*	132	Frozen Italian dishes	51
Low-calorie soft drinks	131	Refrigerated yogurt*	52
Canned pie filling*	128	Refrigerated Mexican foods	53
High-income cities ²	Percent	High-income cities ²	Percent
Seltzers/club soda*	197	Solid shortening*	48
Miscellaneous Refrigerated juices*	171	Canned meat stew	56
Bottled water	171	Canned pie filling*	56
Refrigerated orange juice	160	Refrigerated biscuits*	57
Refrigerated drinks	155	Spoonable salad dressing	60
Frozen green beans*	154	Cornmeal*	61
Dried rice	152	Canned green beans	68
Refrigerated yogurt*	147	Dry toaster items	68
Butter	147	Refrigerated pastries	69
Refrigerated salad dressing*	142	Canned poultry	69

¹Representative low-income cities are: Scranton, Pennsylvania; Charleston, West Virginia; Shreveport, Louisiana; and El Paso, Texas.

²Representative high-income cities are: New York City, New York; Chicago, Illinois; Miami, Florida; and San Francisco, California.

*Items that have both the lowest (highest) indices for high-income regions, and the highest (lowest) indices for low-income regions.

Source: Compiled from data collected by Selling Area Marketing Incorporated (SAMI), 1990.

plays an important role in explaining consumption patterns across regions. Many of the products for which spending is above average (having indices greater than 100) in the high-income markets can be considered high value or discretionary, with the low-income markets showing above-average spending on more basic, staple goods and goods that require additional home preparation. Expenditures on many refrigerated and frozen products are above average in the high-income markets but below average in the low-income markets.

Above-average spending on flour, cornmeal, and shortening in low-income markets suggests a greater tendency toward baking at home and preparing meals from scratch. In contrast, cornmeal and solid shortening expenditures are both well below average in the high-income regions. The expenditure index for flour in the high-income markets, though not among the bottom 10, is below the U.S. average with an index of 77.

There is some evidence that diets, or at least grocery store purchases, in high-income markets are less calorie dense (table 3). Note the heavy emphasis on juices and frozen vegetables in the high-income regions and the relatively low expenditures on high-fat items such as sausage and shortening. Low-income regions exhibit the opposite pattern: above-average grocery store expenditures on calorie-dense food items such as sausages and shortening and below-average expenditures on many of the vegetable items.

...and the Form

Income also strongly affects the form in which particular foods are purchased. Many foods on supermarket shelves are available in two or more ways. For example, pasta

dishes can be purchased canned or frozen or as a quickly prepared dry dinner. Orange juice is available refrigerated or canned or as a frozen concentrate. Food forms differ in quality, with corresponding price differences. Much of the increase in food spending as income increases likely is not a change in what is eaten but is an improvement—in terms of taste, nutrition, quality, or convenience—in the form in which it is purchased. This sort of increased food spending involves little, if any, increase in use of farm commodities but rather an increase in intermediate inputs and labor.

As an example, we considered the choice between frozen and canned versions of four common vegetables: corn, green beans, peas, and spinach. Most consumers view frozen vegetables as better quality, but canned varieties are usually less expensive. For each of the 54 markets, we computed total expenditures on the frozen and canned versions of the 4 vegetables. Over the entire United States, frozen versions accounted for 34 percent of combined spending on canned and frozen corn, green beans, peas, and spinach. In the representative high-income markets discussed earlier, the frozen versions of these four vegetables accounted for 50 percent of total sales, but in the low-income markets the proportion was only 24 percent. Similar relationships were found for other types of foods.

Income variation and differences in culture and ethnic background are not the only factors contributing to regional differences in diet. Changes in diet and eating have also been brought about by changing lifestyles and new household structures. Much attention has been given to the increasing number of women in the work force and consequent rise in demand for convenience foods. This effect can be

observed across the 54 markets used in our analysis.

In our set of 54 markets, female labor force participation varies from a low of 40 percent in Charleston, West Virginia, to 65 percent in Minneapolis, Minnesota. Eleven of the 25 grocery categories that are most positively associated with the female labor force participation rate are frozen foods. Many of the remainder are convenience items—prepared rice, yogurt, fruit and cereal bars. Of the 25 items with unusually low sales in markets with many working women, 8 are baking ingredients, including flour, sugar, yeast, and shortening. Frozen items are absent. The only “baking ingredient” among the top 25 foods most positively associated with working women is refrigerated bread dough.

Regional patterns in sociodemographic factors such as income and the female labor force participation rate, to the extent that they exist, will translate into perceptible differences in food purchasing patterns across those regions. In short, increasing market participation by household members, and rising incomes, have contributed to differences in the regional pattern of food purchasing as well as altering that for the Nation as a whole.

Changes in culture, income, and demographic characteristics of U.S. households tend to be studied closely to monitor their effect on dietary changes over time. But at even a single point in time, the surprising variation in these same factors across the United States leads to large differences in the types of foods consumed in different regions. Observing these regional differences is obviously important to marketers hoping to target products to specific types of consumers, but it is also important to researchers hoping to gain a better understanding of how economic and demographic factors affect food expenditures. ■

Many Americans Falsely Optimistic About Their Diets

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Mounting evidence that diet can have profound and long-term effects on health has sparked concerns about the quality of Americans' diets. Many private and public campaigns have tried to educate the public about healthful diets. A key requirement for the success of these efforts is that individuals are able to assess their dietary quality accurately, a difficult requirement because it assumes that people know the kinds and amounts of nutrients in the foods they eat and what constitutes a healthful diet. Campaigns to promote healthful diets will be of no use if people falsely believe their diets are healthful enough.

A 1998 study by researchers with the U.S. Department of Agriculture's (USDA) Economic Research Service looked at people's perception of their dietary fat intake as compared with their actual intake of dietary fat. The study showed that a gap exists between actual and perceived dietary fat intakes. About 30 percent of the respondents in a 1989-91 sur-

vey mistakenly assessed their fat intake to be about the right level for a healthful diet.

We expand on that study to look at whether self-assessed overall diet quality differs from actual overall diet quality and for which population groups this gap is the largest. We used intake data and questionnaire responses for meal planners/preparers from two nationally representative USDA surveys—the 1989-90 Continuing Survey of Food Intakes by Individuals (CSFII) and its companion Diet and Health Knowledge Survey (DHKS). We used the 1989-90 surveys rather than the more recent 1994-96 surveys because only the 1989-90 surveys asked respondents to assess the overall quality of their diets. These surveys collect information on the food that people eat and their sociodemographic characteristics, and ask respondents about their nutrition knowledge, diet-health awareness, and attitudes about healthful eating.

We found that many people inaccurately assess their actual diets. About 42 percent of the respondents mistakenly believed their diets were more healthful than they were. These mistakenly optimistic people present a special problem for nutrition educators because they do not realize they are at risk from their unhealthy diets. Nutrition educa-

tion efforts targeted to these people first need to alert these optimists about their false perceptions and then help them assess their diets accurately.

Diets Were Scored and Rated

We measured the respondents' actual diet quality using the Healthy Eating Index (HEI). The HEI was developed by USDA's Center for Nutrition Policy and Promotion to measure how well a diet conforms to the recommendations of the *Dietary Guidelines for Americans* and the Food Guide Pyramid (see box). The index has a total possible score ranging from 0 to 100. The higher the score, the better the diet. "Good" diets carry a score above 80 points. A diet with a score of 51 to 80 "Needs Improvement," and a diet with a score below 51 points is considered "Poor." Three-fourths of the respondents' diets rated "Needs Improvement." Eleven to 12 percent of the respondents' diets were "Good," and 14 to 15 percent were "Poor."

Self-assessed diet quality was inferred from responses to the DHKS question: "In general, would you say the healthfulness of your diet is excellent, very good, good, fair, or poor?" We classified the respondents into six groups accord-

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ing to their degree of accuracy in assessing their actual diet quality (table 1):

Extreme Optimists assessed their Poor diets as Excellent or Very Good;

Optimists assessed their Poor diets as Good or Fair or assessed their Needs Improvement diets as Excellent or Very Good;

Moderates correctly assessed their Needs Improvement diets as Good or Fair;

Pessimists assessed their Good diets as Poor;

Unhealthy Realists correctly assessed their Poor or Needs Improvement diets as Poor; and

Healthy Realists correctly assessed their Good diets as Excellent, Very Good, Good, or Fair.

Many Too Optimistic About Their Diets

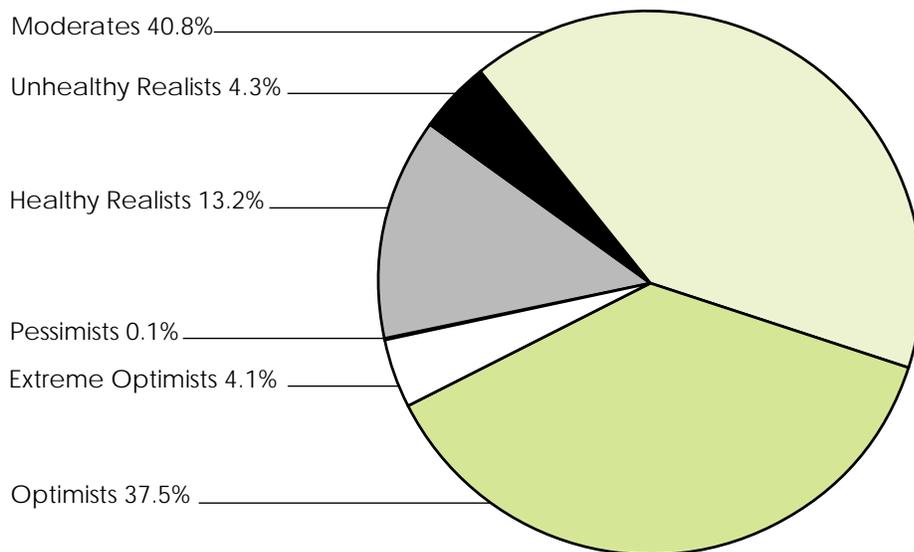
Approximately 4 percent of the respondents were Extreme Optimists, and about 38 percent were Optimists (fig. 1). The average HEI score was 44 for the Extreme Optimists and 55 for the Optimists. These two groups need special attention from nutrition educators because they incorrectly perceive their diets to be more healthful than is correct. About 41 percent of total respondents were Moderates, correctly realizing that their diets (averaging an HEI score of 64) needed improvement. About 4 percent of respondents were Unhealthy Realists, with an average HEI score of 53. Unhealthy Realists know their diets are poor or need improvement. They and the Moderates may be successful targets for nutritional and dietary campaigns since they would be open to suggestions of ways to improve their diets.

Table 1
Some Americans Are Wishful Thinkers, and Others Fear the Worst About Their Diets

Respondent group	Perceived diet quality	Actual diet quality (HEI Score ¹)
<i>Ratings</i>		
Extreme Optimists	Excellent or very good	Poor (below 51)
Optimists	Good or fair	Poor (below 51)
	Excellent or very good	Needs improvement (51-80)
Moderates	Good or fair	Needs improvement (51-80)
Pessimists	Poor	Good (above 80)
Unhealthy Realists	Poor	Poor (below 51) or Needs improvement (51-80)
Healthy Realists	Excellent, very good, good, or fair	Good (above 80)

¹The Healthy Eating Index (HEI) is scored based on the nutritional quality of the respondent's actual diet: the higher the HEI, the better the diet. Source: USDA's Economic Research Service.

Figure 1
More Than a Third of Those Surveyed Overestimated the Quality of Their Diets



Source: Computed by USDA's Economic Research Service from USDA's 1989-90 Continuing Survey of Food Intakes by Individuals (CSFII).

Not everyone's diet is in trouble. Thirteen percent of the survey respondents were Healthy Realists who correctly knew that their diets, averaging a HEI score of 85, were fine. Less than one percent of respondents, the Pessimists with their average HEI score of 83, incorrectly thought their healthful diets were not healthful enough. These two groups are not in need of dietary advice as they are already following sound nutrition practices.

Accuracy of Self-Assessment Varies By Sociodemographics

Men were more likely to be mistakenly optimistic about their diet quality than women. About 5 percent of male respondents were Extreme Optimists, assessing their actual Poor diets to be Excellent or Very Good (table 2). About 4 percent of female respondents were Extreme Optimists. Forty-five percent of

male respondents were Optimists, as opposed to 35 percent of female respondents.

Higher percentages of respondents who were less than 50 years old were Extreme Optimists. However, the percentages of respondents who were Optimists were higher for 30- to 49-year-olds and for 50- to 69-year-olds than those of other age groups. In particular, people between 30 and 49 years old were more likely to be either Extreme

Measuring Diet Quality: The Healthy Eating Index

The HEI measures overall diet quality by evaluating how an individual's diet stacks up to the 10 dietary recommendations in the *Dietary Guidelines for Americans* and the Food Guide Pyramid.

The first five HEI components measure the extent to which a person's diet conforms to the Food Guide Pyramid serving recommendations for the grain, vegetable, fruit, milk, and meat groups. For each of these five food-group components of the HEI, an individual's diet is assigned a score between 0 and 10. Those consuming the recommended number of servings received a maximum score of 10 (a score of zero was assigned for any food group where no items from that food group were eaten). Intermediate scores were given for intakes between the two limits, calculated proportionately to the number of servings consumed. For example, if the recommended number of servings for the grain group was eight and an individual consumed four servings of grain products, then the person would receive a score of 5 points (half of 10) for the grain component of his or her HEI.

HEI components 6 through 10 measure the extent to which a person's diet conforms to the Dietary Guidelines recommendations for total fat, saturated fat, cholesterol, sodium, and variety. An individual's

diet was assigned a score between 0 and 10 for these components as well. The scores for fat and saturated fat were related to their consumption in proportion to total food energy (calories). Fat intakes less than or equal to 30 percent of total calories were given a score of 10. The score declines to zero when the proportion of fat to total calories was 45 percent or more. Intakes between 30 and 45 percent were scored proportionately. Saturated fat intakes of less than 10 percent of total calories received a score of 10, while zero points were given for saturated fat intakes of 15 percent or more of calories. Scores were proportionately given for fat intakes between 10 percent and 15 percent of total calories.

Scores for cholesterol and sodium were given based of milligrams consumed in the diet. A score of 10 was given for cholesterol intakes less than or equal to 300 milligrams daily. Zero points were given for intakes at or over 450 milligrams. For sodium, the maximum score (10) meant intake was less than or equal to 2,400 milligrams. A zero score was given for sodium intakes at 4,800 milligrams or higher. Intermediate scores for cholesterol and sodium intakes between the two cutoff points were given proportionately.

Dietary variety was assessed by totaling the number of "different" foods eaten in amounts sufficient to

contribute at least half of a serving in one or more of the five pyramid food groups. Food mixtures were broken into their component ingredients and assigned to relevant food groups. Similar foods, such as two different forms of potatoes or two different forms of white bread, were grouped together and counted only once in measuring the score for variety. A maximum score of 10 was awarded if 16 or more different food items were consumed over a 3-day period. A score of zero was given if six or fewer distinct food items were consumed. Intermediate scores were awarded proportionately for consumption between the cutoffs.

Complete details on the construction of HEI can be found in the USDA's Center for Nutrition Policy and Promotion publication *The Healthy Eating Index*, CNPP-1, October 1995.



Optimists or Optimists. This indicates not only that many respondents in this age group eat unhealthy diets, but also that they do not realize what they eat in terms of healthfulness. Respondents over the age of 70 had a more accurate sense of the healthfulness of their diets.

There was little difference between the percentage of Blacks and the percentage of Whites who were extremely optimistic or optimistic about their diet quality. However, the percentages of other races—including Asian, Pacific Islander, Aleut, Eskimo, and

American Indian—that were Extreme Optimists or Optimists were lower than for Blacks and Whites.

The share of Hispanics who assessed inaccurately their Poor diets to be Excellent or Very Good was greater than that of non-

Table 2
Consumer Self-Assessment of Diets by Sociodemographic Characteristics

Characteristic	Extreme Optimists	Optimists	Moderates	Unhealthy Realists	Healthy Realists	Pessimists
<i>Percent</i>						
Sex:						
Male	5.4	45.3	37.3	6.3	5.7	0
Female	3.8	35.2	41.8	3.7	15.3	0.1
Age:						
< 30	6.9	32.4	50.2	7.1	3.4	0
30-49	5.1	41.6	40.6	4.6	8.2	0
50-69	1.7	38.5	34.3	3.7	21.6	.2
> 70	2.0	27.8	40.4	1.2	28.2	.4
Race:						
White	4.3	37.6	39.7	3.9	14.5	.1
Black	3.6	40.2	44.8	8.1	3.2	0
Other	1.0	25.4	57.8	1.8	13.4	.6
Ethnic origin:						
Hispanic	9.5	37.3	36.6	5.1	11.5	0
Non-Hispanic	3.8	37.5	41.1	4.3	13.3	.1
Percentage of the poverty threshold: ¹						
< 131	3.5	35.3	44.1	6.7	10.0	.4
131-250	6.2	32.6	43.9	3.7	13.1	.4
251-500	3.8	37.2	41.3	3.8	13.7	.1
> 500	3.3	44.0	34.5	2.9	15.2	0
Education:						
High school	4.6	33.5	43.9	4.7	13.1	.1
College	3.7	41.2	37.1	4.5	13.6	0
Post college	2.9	49.8	32.7	1.7	12.7	.3
Smoking now:						
Yes	6.5	42.8	38.8	7.7	4.1	.1
No	4.5	34.5	35.4	6.3	19.2	0
Weight: ²						
Overweight	4.7	35.4	42.6	5.8	11.3	.1
Else	3.6	39.6	39.2	3.0	14.6	.1

¹Poverty threshold was \$13,359 for a family of four in 1990.

²Weight status was declared by the respondents.

Source: Computed by USDA's Economic Research Service from USDA's 1989-90 Continuing Survey of Food Intakes by Individuals.

Hispanics, 10 percent and 4 percent, respectively. However, there was little difference between Hispanics and non-Hispanics for the optimists group.

Respondents' accuracy in self-assessing their diets tended to increase with income level for the Healthy Realists. However, for Moderates, this was reversed. The percentage of Optimists was smallest for respondents with incomes between 131 and 250 percent of the poverty threshold and largest for respondents with the highest incomes.

As expected, our analysis found that people's mistaken optimism about the quality of their diets decreased with formal education, at least for the Extreme Optimists. Respondents with more years of formal education generally have

greater access to magazines and newspapers and, therefore, may have more nutrition information, enabling them to assess their actual diet quality levels more accurately. However, surprisingly, accuracy in self-assessment of diets for the Optimists decreased with education. That is, respondents with higher levels of formal education were more likely to assess their Poor diets as Good or Fair or their Needs Improvement diets as Excellent or Very Good.

Interestingly, many of the richer and more highly educated respondents had a falsely optimistic view of their diets. Perhaps this is because they think they know more about nutrition than they do. Higher incomes may allow them to eat more expensive, fatty, and sugary foods. Or perhaps the more wealthy

and highly educated place a high value on their time, choosing less nutritious convenience foods or foods prepared away from home in place of home cooked meals.

Smokers and nonsmokers differed little in the percentage found to be extremely optimistic about their diet quality. However, smokers were more likely to be optimistic in their assessment of their diets than nonsmokers.

Expectedly, the percentage of Extreme Optimists was higher among respondents who considered themselves overweight than among all other respondents—5 percent versus 4 percent. However, only 35 percent of the admittedly overweight respondents were Optimists versus 40 percent of respondents who did not consider themselves to be overweight.

Table 3
Consumer Self-Assessment of Diet by Attitudes on Diet and Health

Attitude	Extreme Optimists	Optimists	Moderates	Unhealthy Realists	Healthy Realists	Pessimists
<i>Percent</i>						
How important is maintaining a desirable weight to you:						
Very important	3.6	41.0	36.0	4.8	14.5	0.1
Others	4.8	33.3	46.4	3.8	11.5	0
The things I eat and drink now are healthy so there is no reason for me to make changes:						
Strongly agree	3.4	44.1	26.7	3.0	22.6	.2
Others	4.3	36.4	43.2	4.6	11.4	.1
What you eat can make a big difference in your chance of getting a disease, like heart disease or cancer:						
Strongly disagree	1.6	37.2	33.7	6.8	20.7	0
Others	4.3	37.7	40.9	4.3	12.9	.1
How important is nutrition to you when you shop for food:						
Very important	4.5	43.0	33.2	3.3	15.8	.2
Others	3.7	30.2	50.8	5.8	9.6	0

Source: Computed by USDA's Economic Research Service from USDA's 1989-90 Diet and Health Knowledge Survey.

Accuracy Also Varies by Attitudes on Diet and Health

People's attitudes about diet and health influence their dietary behavior. Linking these attitudes, such as awareness of the link between diet and health, with respondents' accuracy in self-assessing their diets can allow nutrition educators to see which groups need the most nutrition guidance.

Besides the question about perceived overall diet quality, the DHKS also asked a series of questions about nutrition knowledge, attitudes, and diet-health awareness. We analyzed how the six groups responded to those questions and whether any patterns emerged.

Fewer respondents who thought maintaining a desirable weight was very important were Extreme Optimists than other respondents, about 4 percent versus 5 percent (table 3). About 41 percent of the respondents who thought maintaining a desirable weight was very important were Optimists versus 33 percent of other respondents. Those people who thought maintaining their weight was important optimistically believed that they were eating a diet to accomplish that.

As expected, people who rated their diets as Excellent to Fair were more likely to agree with the statement, "The things I eat and drink now are healthy so there is no reason for me to make changes." Forty-eight percent of the respondents who agreed strongly that no changes were needed to their diets were Extreme Optimists or Optimists while 41 percent of the respondents who did not agree strongly with that statement were Extreme Optimists or Optimists.

Respondents who strongly disagreed with the statement, "What you eat makes a big difference in your chance of getting a disease, like heart disease or cancer," were



Many richer, more highly educated survey respondents perceived their diets as much more healthful than in actuality. Higher incomes may permit them to purchase more expensive, fatty, and sugary foods, or they may eat out more often, choosing foods that are less healthful than home-cooked meals.

Credit: PhotoDisc

less likely to be Moderates than respondents who did not strongly disagree with the statement. However, there was little difference in the Optimists.

Respondents who consider nutrition to be very important in food shopping were more likely to be Extreme Optimists and Optimists (5 percent and 43 percent, respectively), compared with 4 percent and 30 percent of other respondents.

Nutrition Messages May Need a Redesign

According to our analysis, there is a clear gap between many people's self-assessment of their diets and their actual diet quality. In particular, we found that males, people between 30 and 49 years of age, Hispanics, wealthier individuals, and those with more formal schooling have a greater tendency to be falsely optimistic about the quality of their diets. The respondents who inaccurately assessed their diets, the

Extreme Optimists and the Optimists, may consist largely of people who have intentions of maintaining a healthful diet but misunderstand the nutrition and diet information available to them.

Our analysis points out the challenges facing successful nutrition guidance and policies. People who assess their diets inaccurately are unaware that their diets may be detrimental to their health. They have no motivation to change their diets unless they realize their false perceptions on dietary quality. They may be more willing to follow nutritional advice if they realize their misjudgement. Thus, effective nutrition education and guidance must get these falsely optimistic consumers to look at what they are eating and at the specifics of their nutrition gaps or excesses. Then these people may be better able to use nutrition advice to improve their diets.

The Extreme Optimists and Optimists may also consist of peo-

ple heavily influenced by tastes or preferences in making food choices. Tasty food often contains more sugar, fat, or saturated fat, which are not healthful. Some cultural preferences for foods, such as deep fried foods or fattier meats or cream sauces, may date to a time when nutrition knowledge was less complete. People who choose foods based on tastes and preferences over nutrition may not realize the weaknesses in their diets.

The Moderates, who assessed their Needs Improvement diets as Good or Fair, and the Unhealthy Realists, who correctly assessed their Poor or Needs Improvement diets as Poor, may have problems choosing healthful diets because of limited incomes, limited time available to prepare food, or unwillingness to change their food choices.

Dietary perceptions and habits interact and are slow to change. When people believe that their diets are healthful enough, or if attributes, such as convenience and taste,

are more important to people than nutritional quality, then it is very difficult to get them to change their dietary habits.

However, the introduction of nutrition labeling and advertising rules and regulations are a step in the right direction toward helping consumers make smart food choices. The "Nutrition Facts" label, which became mandatory in 1994, lists the content of calories, fat, saturated fat, and cholesterol (in addition to other nutrients) in each serving of most packaged food items. Studies indicate that the Nutrition Facts label has generally enhanced consumers' ability to make informed nutritional decisions.

Meat and poultry labeling and the health claims that are permitted in food advertising have also changed. For example, whole oat grain foods that contain at least 0.75 grams of soluble fiber per serving and that are low in saturated fat and cholesterol can claim that they may reduce the risk of heart disease, when part of a diet low in saturated fat and

cholesterol. A growing body of evidence suggests that health claims by food producers and manufacturers have significant potential to increase consumer awareness of diet-health issues and to improve consumer dietary choices, especially for groups not well reached by Government-sponsored promotion activities. Therefore, the overall diet quality of the population may improve if food advertising with accurate health claims reaches consumers who are falsely optimistic about their diets.

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Acculturation Erodes the Diet Quality of U.S. Hispanics

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By 2020, Hispanics are expected to account for 16 percent of the U.S. population. Hispanics would become the second largest segment of the population, lagging non-Hispanic Whites at 64 percent and exceeding non-Hispanic Blacks at 13 percent.

The U.S. Hispanic population poses a number of policy puzzles because its health and mortality record is in some respects more favorable than that of the general population, despite economic and educational disadvantages. If traditional diet patterns contribute to this favorable record, adoption of typical American eating patterns may erode it. Examination of Hispanic diets reveals that less acculturated Hispanics—those who don't use English—eat somewhat more healthful diets than acculturated Hispanics—those who use English. Nutrition education programs for Hispanics need to emphasize retaining their traditional diets' reliance on grains and beans, while advocating change toward lower fat dairy products and less use of fat in cooking.

Status of Hispanics Varies by Origins

In 1997, Hispanics accounted for 11 percent of the U.S. population. (The Census Bureau defines Hispanics as those who indicate their origins as Mexican-American, Chicano, Mexican, Puerto Rican, Cuban, Central or South American, or other Hispanic when shown a "flash card" listing ethnic origins.) In general, the Hispanic population is younger, poorer, less educated, and in larger households than the non-Hispanic population (table 1).

Median earnings for Hispanic males working full time in 1996 were \$21,055, compared with \$34,163 for non-Hispanics. Economic disadvantages reflect education disadvantages. Only 61 percent of Hispanics age 25-34 were high school graduates, compared with 91 percent of non-Hispanics.

The Hispanic population varies significantly by regional origins. The Census Bureau categorizes Hispanics for informational purposes by Mexican, Puerto Rican, Cuban, Central and South American, and other origins. The largest and rela-



Traditional diet eaten by less acculturated Hispanics, those who don't use English, is somewhat more healthful than that of acculturated Hispanics.

Credit: PhotoDisc.

The authors are economists with the Food and Rural Economics Division, Economic Research Service, USDA.

tively most disadvantaged Hispanic subgroup is of Mexican origin. This group records the lowest median earnings for full-time workers and the lowest percentage of 25- to 34-year-olds that are high school graduates. In addition, the Mexican-origin population is younger and consists of larger households. The very small Cuban-origin population is relatively the most advantaged among Hispanic groups, although it is has not yet achieved the income and education of the general U.S. population. Puerto Rican-origin and "other Hispanics" are similar in income and education to Cuban-origin Hispanics. U.S. Hispanics of Central and South American origins come close to Mexicans in earnings, but have a higher level of high school graduates among 25- to 34-year-olds.

Disease and Mortality Puzzle Policymakers

Despite lower incomes and educational attainments, the Hispanic population enjoys a health and mortality record that in many respects is more favorable than that of the general population. Cutberto Garza, a physician and professor at Cornell University, comments that

despite higher poverty and teenage fertility rates and less awareness of major risk factors for cancer and cardiovascular disease:

Hispanics in the Southwest have 99 percent of the life expectancy at birth of non-Hispanic whites. Even more remarkable, however, is that the lower than expected deaths due to heart disease, stroke, and cancer and lower than expected infant mortality are sufficient to compensate almost completely for the extraordinarily high mortality due to homicide and unintentional injury. The major exception... is excess deaths due to diabetes among Hispanic women.

... The most striking challenge is the identification and preservation of factors that promote health before they are lost in the assimilation of Hispanic-Americans.

The higher death rates of Hispanic women from diabetes, compared with the general population, may be due to genetic factors. Garza also reports that Native Americans of the Southwest experience high incidences of diabetes that are

hypothesized to result from a genetic ability to store excess energy, an advantage for populations at risk of severe food shortages. When food is plentiful, diabetes and obesity may result.

Further evidence comes from Paul Sorlie and associates whose research, published in the *Journal of the American Medical Association*, estimated age-adjusted death rates by Mexican, Puerto Rican, Cuban, other Hispanic, and all Hispanic origins. Their research used the U.S. Census Bureau's Current Population Survey and the National Death Index developed by the Center for Disease Control and Prevention. Death rates for men and women over 65 in all groups, except Puerto Rican women, were lower than non-Hispanic rates, as were many rates in the 45-64 age group. Hispanics had lower mortality from cancer and cardiovascular disease, but higher mortality from diabetes and homicide (men). The authors note that the lower rates of the diseases did not seem to be explained by the major known risk factors for these diseases, such as smoking. The authors explored the possibility that the presence of recent immigrants in the Hispanic population lowered death rates because immigrants tend to be

Table 1
U.S. Hispanic Populations Vary Widely in Age, Earnings, Level of Schooling, and Household Size

Population	Median age	Full-time median earnings male	Full-time median earnings female	25- to 34-year-olds who are high school graduates	Households with over 2 persons
	Years	1996 dollars		Percent	
Non-Hispanic	35.5	34,163	24,314	91.4	40.5
Hispanic	26.1	21,055	18,664	61.2	63.4
Mexican origin	24.3	19,981	17,266	55.6	67.5
Puerto Rican origin	27.0	25,720	22,461	74.3	56.4
Cuban origin	40.8	27,397	21,511	76.3	44.8
Central and South American origin	28.7	20,537	18,922	65.5	65.2
Other Hispanic origin	28.5	26,276	18,686	77.5	55.8

Source: Bureau of the Census, *Hispanic Population of the United States*, Current Population Survey—March 1997, Summary Tables, released August 1998.

healthier than non-immigrants. However, Hispanic mortality rates remain lower even adjusted for country of birth.

The Council on Scientific Affairs reviewed Hispanic use of health services and disease incidence, noting that Hispanics, particularly Mexican Americans, have lower rates of premature births and lower rates of low-birth-weight babies, major risk factors for infant mortality, than the general population. This outcome contradicts expectations that would be formed from the lower income and education levels of Hispanics. The authors also note that with acculturation, the risk of low-weight births increases, which might be due to increased smoking by pregnant women.

Hispanics Surpass Non-Hispanics in Diet Quality...

Diet could contribute to the lower than expected incidence of cancer and cardiovascular disease incidence in the U.S. Hispanic population. Sylvia Guendelman and Barbara Abrams with the University of California at Berkeley compared dietary quality of immigrants and following generation of Mexican Americans with non-Hispanic Whites. The researchers used the Hispanic Health and Nutrition Evaluation Survey of 1982-1984 and the National Health and Nutrition Evaluation survey of 1976-1980. They concluded that as Mexican-origin women move from the first to the second generation, the quality of their diet deteriorates and approximates that of White non-Hispanic women. The researchers found that lower incomes were associated with less healthful diets among non-Hispanics, but with more healthful diets among first-generation Mexi-

can Americans. Among second-generation Mexican Americans, they found no relationship between income and diet quality.

An earlier study by USDA's Economic Research Service examined the interaction of Hispanic ethnicity, income, and education levels on intake of fat, saturated fat, and cholesterol, separating the direct effect of Hispanic ethnicity from the indirect effect of less nutrition knowledge as a result of lower education and income. The direct effect of Hispanic ethnicity was to reduce fat, saturated fat, and cholesterol intake. However, the indirect effect, through less knowledge as a consequence of lower income and education levels, offset these direct effects.

... Especially Spanish-Speaking Hispanics

In this study, we examined whether the quality of Hispanic diets differed based on acculturation. The 1994-96 Continuing Survey of Intake by Individuals (CSFII) provides detailed information on intake of individuals as well as other information about them. The information includes whether the person was interviewed in Spanish. Thus, using interviews in Spanish as a proxy for acculturation, it is possible to compare the diets of nonacculturated Hispanics (Spanish speakers) with acculturated Hispanics (English

speakers) and non-Hispanic Whites, the largest population category.

Dividing the Hispanic survey respondents into Spanish speakers and English speakers highlights the economic disadvantages of Spanish speakers. Adult Spanish speakers lived in households that attained a median household income of 110 percent of the poverty level, compared with 201 percent for English speakers and 300 percent for non-Hispanic Whites. Households with youth were more likely to be in poverty, which is based on the number of people in the household as well as income. Spanish-speaking youth (17 and under) lived in households with a median household below the poverty level, at 82 percent, compared with 131 percent of the poverty level for English-speaking youth and 291 percent for non-Hispanic White youth. (The median income divides households exactly in half—50 percent have higher incomes and 50 percent have lower; it is not necessarily the average.)

We used scores on the U.S. Department of Agriculture's (USDA) Healthy Eating Index (HEI) to determine whether acculturation erodes diet quality. The HEI, developed by USDA's Center for Nutrition Policy and Promotion, measures how well a diet conforms to 10 dietary recommendations in the *Dietary Guidelines for Americans*

Table 2
Hispanic Spanish Speakers Score Highest on Healthy Eating Index

Population	Healthy Eating Index scores ¹	
	Age 18 and over	Under 18
Non-Hispanic White	63.41	66.49
Hispanic Spanish speakers	65.11	69.44
Hispanic English speakers	62.73	64.96

¹ Score of 100 indicates a perfect diet; scores in the range of 81-99 indicate a good diet; scores in the range of 51-80 indicate a diet that needs improvement; and scores of 50 or under indicate a poor diet.

Source: Calculated by USDA's Economic Research Service from 1994-96 Continuing Survey of Food Intake by Individuals (CSFII) data.

Table 3
Hispanic Attitudes and Knowledge About Nutrition Diverge

Population	Knowledge and attitude index scores for adults		
	Healthy diet importance ¹	Nutrient content knowledge ²	Diet-disease awareness ³
Non-Hispanic White	37.10	9.50	6.00
Hispanic Spanish speakers	39.25	6.39	5.42
Hispanic English speakers	36.87	8.63	5.69

¹Scores range from 11 (low importance) to 44 (high importance).

²Scores range from 0 (no knowledge) to 15 (high knowledge).

³Scores range from 0 (no awareness) to 7 (high awareness).

Source: Calculated by USDA's Economic Research Service from 1994-96 Diet and Health Knowledge Survey data.

and the Food Guide Pyramid (see "Many Americans Falsely Optimistic About Their Diets" elsewhere in this issue). All six populations (adult and youth Hispanic English speakers, adult and youth Hispanic Spanish speakers, and adult and youth non-Hispanic Whites) fall below the 80-100 range that indicates a healthful diet. Properly designed and successful nutrition education programs would benefit all six populations.

Despite their economic disadvantages, Spanish speakers eat more healthful diets than do non-Hispanic Whites and Hispanic English speakers (table 2). But the effects of acculturation, which is accompanied by improved economic circumstances, erode diet quality. Adult Spanish speakers average 65.11 on the HEI, exceeding the 63.41 average of non-Hispanic Whites. English speaking Hispanic adults do not score as well, averaging 62.73. The results for youth are even more striking. Spanish speaking youth score 69.44 on the HEI, well above non-Hispanic White youth at 66.49, while Hispanic English speakers drop to 64.96.

Differences in fat, cholesterol, and fiber intake contribute to the Spanish speakers' HEI scores. Adult Spanish speakers average approximately 4.6 grams per day less total fat and 1.9 grams per day less satu-

rated fat than non-Hispanic Whites. However, Spanish speakers' consumption of cholesterol exceeds recommended levels, while cholesterol consumption of the other groups stays below recommended levels. Spanish speakers consume approximately 3.4 more grams of fiber per day than non-Hispanic Whites, but the Spanish speakers still fall short of the standard of 25 grams per day, averaging only 19.4. Hispanic English speakers lag Spanish speakers by 2.9 grams of fiber per day.

We measured people's attitude toward the importance of a healthful diet from the Diet and Health Knowledge Survey. This survey contacts a subsample of the respondents to the CSFII and asks questions on the importance of avoiding too much of nutrients such as fat, saturated fat, and cholesterol in their diets. We measured diet-disease awareness by yes or no answers to another question on whether the respondent had heard about health problems related to several nutrients. Nutrient content knowledge was measured by correct choices between pairs of foods on the basis of higher or lower fat and nutrient contents.

Spanish speakers' higher HEI scores are not the result of better nutritional knowledge. Spanish speakers know less about nutrients

in foods and diet-disease connections than do non-Hispanic Whites and Hispanic English speakers, although Spanish speakers attach more importance to having a healthful diet (table 3). Limited knowledge could reflect Spanish speakers' limited access to advertising and labeling information in English.

Non-Hispanic Whites record more knowledge, less emphasis on the importance of a healthful diet, and lower HEI scores. One explanation is that non-Hispanic Whites' higher incomes may lead them to seek convenience foods and away-from-home foods more often. Prior ERS studies have found that these foods are more likely to have increased fat and cholesterol levels and lower fiber than home-prepared foods.

Nutrition education programs for Hispanic populations need to advocate both preservation and change in diets. Noting that some aspects of traditional diets are healthful, nutritionists have incorporated them in recommended diets. For example, Diva Sanjur of Cornell University has developed sample Mexican and Mexican-American menus based on the U.S. dietary guidelines. These menus maintain reliance on beans, rice, and tortillas, but emphasize low-fat dairy products in place of traditional ones and fry beans in small amounts of vegetable oil. Thus, it is possible and desirable to

incorporate many components of traditional Hispanic foods in nutrition education guidelines. An exchange of food habits between the Hispanic and non-Hispanic populations might even help both groups achieve needed dietary improvements.

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